

# SHOP MANUAL

HONDA PORTABLE GENERATOR

E2500

AVR MODEL









## PREFACE

This shop manual covers the specifications, construction, troubleshooting, inspection and service procedures of the HONDA Portable Generator Model E2500.

The HONDA Models G65ED or G65EN engine is installed to power the generator. Refer to the separate manual "HONDA General Purpose Engine G65 Shop Manual" for information on the construction, inspection and maintenance of this engine.

Information in this shop manual is based on 1975 Model E2500E.

Any major changes to this Shop Manual, will be followed by the Service Bulletin. It is recommended that all the Service Bulletins be filed at the back of this shop manual.

HONDA MOTOR CO., LTD.  
SERVICE PUBLICATIONS OFFICE

## CONTENTS

1. GENERAL .....	1
2. EXTERNAL VIEW .....	1
3. SPECIFICATIONS .....	2
4. PERFORMANCE CURVES .....	4
5. DIMENSIONAL DRAWING .....	9
6. CONSTRUCTION .....	10
7. TROUBLE SHOOTING .....	13
8. GENERATOR REMOVAL AND DRIVE BELT ADJUSTMENT .....	15
9. INSPECTION AND REPAIR .....	16
9- 1 Pilot lamp .....	16
9- 2 Fuse (D-C) .....	16
9- 3 Receptacle .....	16
9- 4 Inspection of circuit breaker .....	17
9- 5 Inspection of voltage adjusting knob .....	17
9- 6 Inspection of volt meter .....	18
9- 7 Inspection of engine switch .....	18
9- 8 Inspection of AVR .....	19
9- 9 Inspection of carbon brush and slip ring .....	19
9-10 Inspection of field winding (FC) .....	20
9-11 Inspection of stator auxiliary winding (EC) .....	20
9-12 Inspection of stator A-C output winding (MC) .....	21
9-13 Inspection of stator D-C output winding (DC-C) .....	21
9-14 Inspection of diode rectifier (D1) .....	22
9-15 Replacement of rotor and stator .....	22
10. ENGINE .....	25
11. OUTPUT VOLTAGE AND FREQUENCY CONVERSION .....	26
12. MAINTENANCE SCHEDULE .....	28
13. TORQUE SPECIFICATIONS .....	28
14. WIRING DIAGRAM .....	29



## PREFACE

This shop manual covers the specifications, construction, troubleshooting, inspection and service procedures of the HONDA Portable Generator Model E2500.

The HONDA Models G62ED or G62EN engine is installed to power the generator. Refer to the separate manual "HONDA General Purpose Engine G62 Shop Manual" for information on the construction, inspection and maintenance of this engine.

Information in this shop manual is based on 1972 Model E2500E.

Any major changes to this Shop Manual, will be followed by the Service Bulletin. It is recommended that all the Service Bulletins be filed at the back of this shop manual.

HONDA MOTOR CO., LTD.  
SERVICE PUBLICATIONS OFFICE

## CONTENTS

1. GENERAL	1
2. EXTERNAL VIEW	1
3. SPECIFICATIONS	2
4. PERFORMANCE CURVES	4
5. DIMENSIONAL DRAWING	9
6. CONSTRUCTION	10
7. TROUBLE SHOOTING	13
8. GENERATOR REMOVAL AND DRIVE BELT ADJUSTMENT	15
9. INSPECTION AND REPAIR	16
9-1 Pilot lamp	16
9-2 Fuse (D-C)	16
9-3 Receptacle	16
9-4 Inspection of circuit breaker	17
9-5 Inspection of voltage adjusting knob	17
9-6 Inspection of volt meter	18
9-7 Inspection of engine switch	18
9-8 Inspection of AVR	19
9-9 Inspection of carbon brush and slip ring	19
9-10 Inspection of field winding (FC)	20
9-11 Inspection of stator auxiliary winding (EC)	20
9-12 Inspection of stator A-C output winding (MC)	21
9-13 Inspection of stator D-C output winding (DC-C)	21
9-14 Inspection of diode rectifier (DI)	22
9-15 Replacement of rotor and stator	22
10. ENGINE	22
11. OUTPUT VOLTAGE AND FREQUENCY CONVERSION	26
12. MAINTENANCE SCHEDULE	28
13. TORQUE SPECIFICATIONS	28
14. WIRING DIAGRAM	29

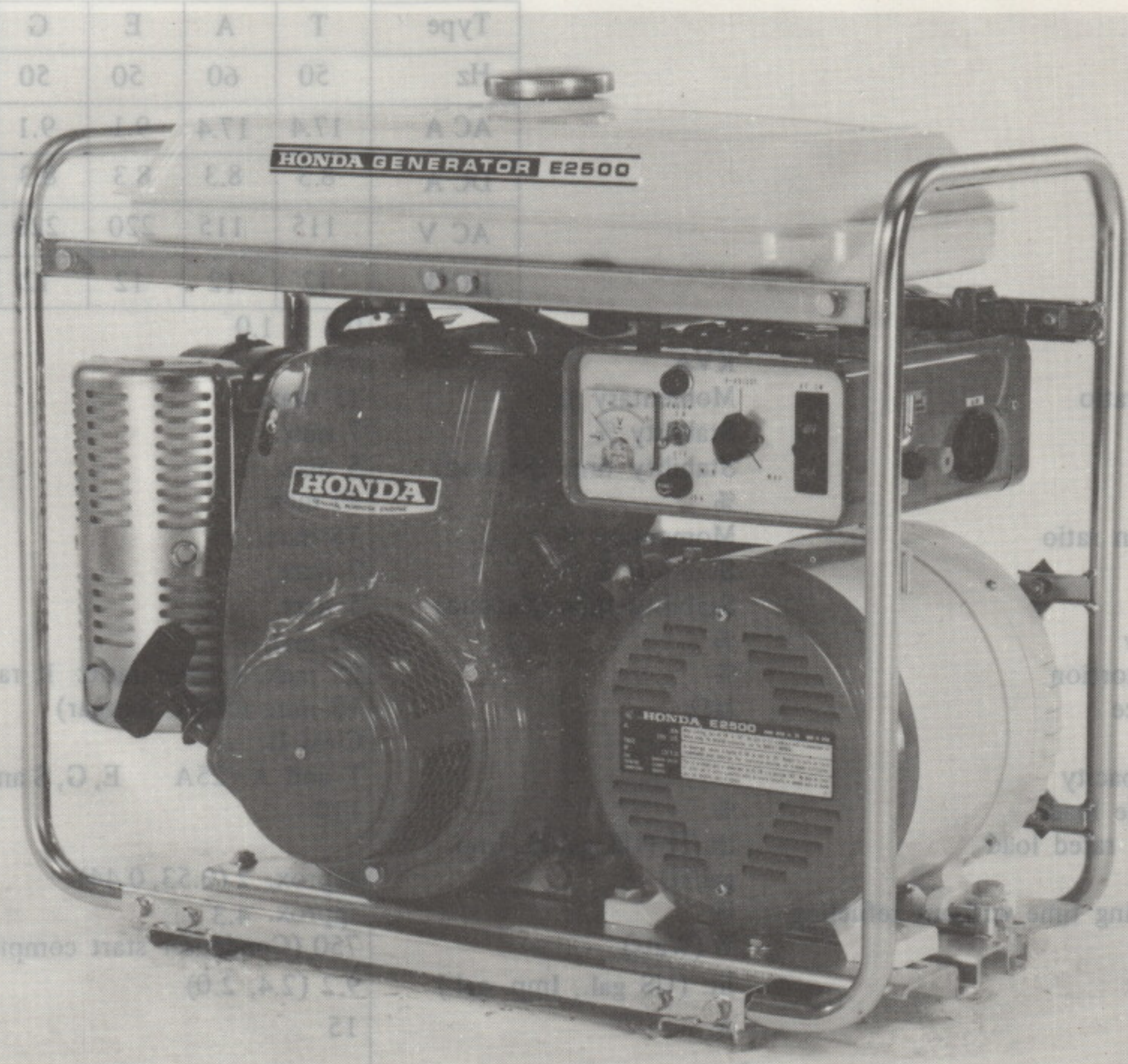


# 1. GENERAL

The Honda Model E2500 Portable Generator is a lightweight AC-DC portable generator that develops up to 2.0 KVA, AC and 100W, DC, at 3,600 rpm, simultaneously. A job proven Honda G65 engine turns out smooth, dependable power to drive the generator through V belts. The fuel tank, muffler, air cleaner and oil filler are redesigned for the engine. An automatic voltage regulator (AVR) assures steady output regardless of changes in the load and speed of the engine. The control box is mounted on a pipe frame through shock absorbing rubbers. The frame is further rubber-mounted on the generator frame to eliminate shocks and vibrations which otherwise would be transmitted to the instruments. Other features incorporated include fixed throttle, recoil starter, full length belt cover and radio noise suppressor in the spark plug cap. Conversion from 50Hz to 60Hz is a matter of changing the V-belts, pulley and internal connection.

# 2. EXTERNAL VIEW

Specification							Item
							Rated output
							AC KVA
							DC W
							Frequency
							Rated current
							Rated voltage
							Rated power ratio
							Maximum output
							Voltage variation ratio
							Voltage stability
							Frequency variation ratio
							Frequency stability
							Ratio of wave distortion
							Insulation resistance
							Insulation class
							Circuit breaker capacity
							Maximum allowable
							Fuel consumption, rated load
							Continuous operating time
							Motor starting
							Fuel tank capacity
							DC fuse capacity





### 3. SPECIFICATIONS

#### WEIGHTS AND DIMENSIONS

Item	Specification
Overall length	mm (in.) 650 (25.6)
Overall width	mm (in.) 400 (15.7)
Overall height	mm (in.) 560 (22.0)
Dry weight	kg (lb) 67(148)
Curb weight	kg (lb) 74(163)
Engine	G65ED, EN

#### PERFORMANCE

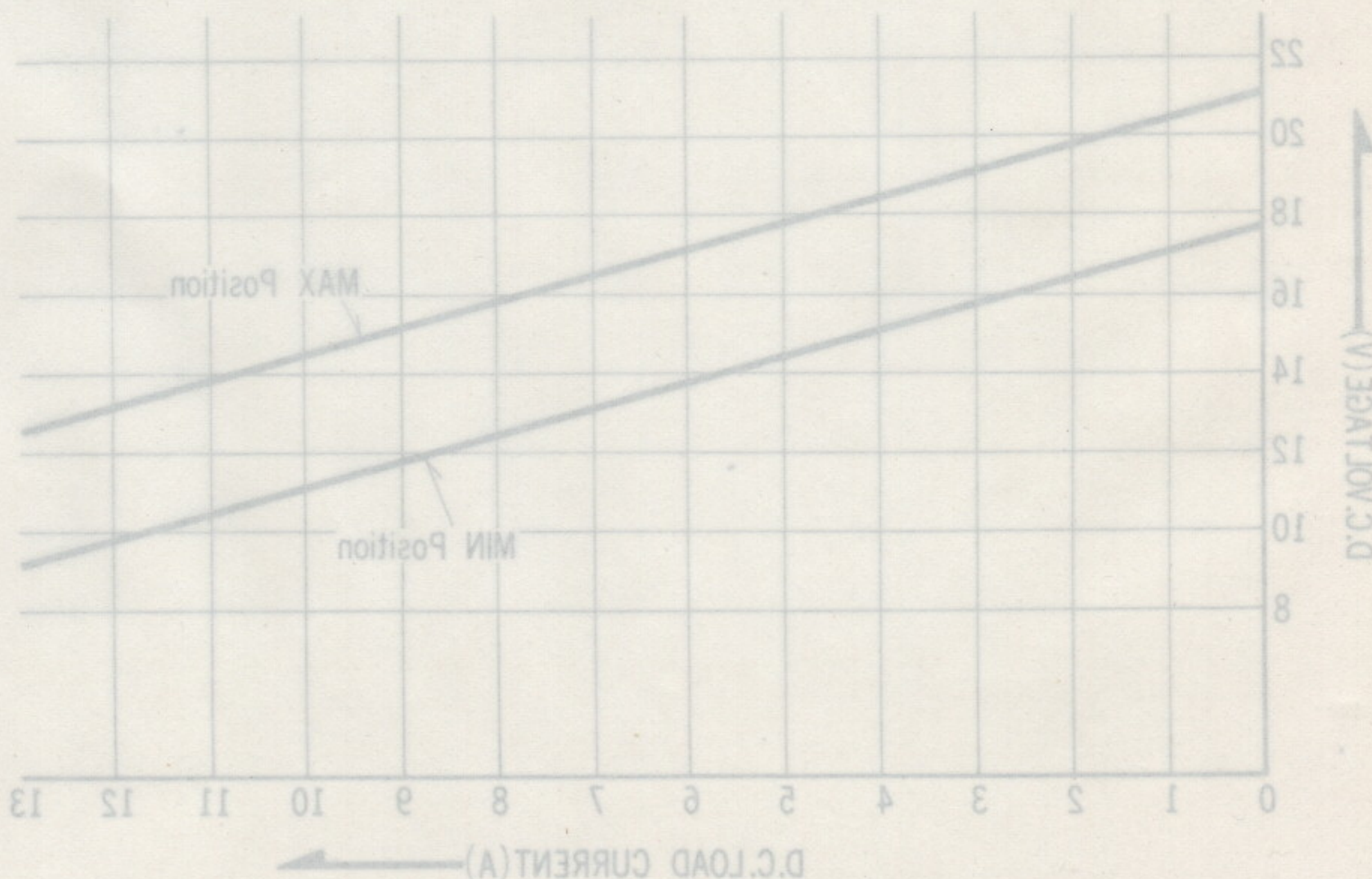
Item	Specification
Rated output	AC KVA 2.0 DC W 100
Frequency	Type T A E G S U Hz 50 60 50 50 60 50
Rated current	AC A 17.4 17.4 9.1 9.1 9.1 8.3 DC A 8.3 8.3 8.3 8.3 8.3 8.3
Rated voltage	AC V 115 115 220 220 220 240 DC V 12 12 12 12 12 12
Rated power ratio	0.8 - 1.0
Maximum output	KVA 2.5
Voltage variation ratio	Momentary % 15 max. Stability % 7 max. Stability time (Second) 5 max.
Voltage stability	% ±1 max.
Frequency variation ratio	Momentary % 15 max. Stability % 7 max. Stability time (Second) 5 max.
Frequency stability	% ±2 max.
Ratio of wave distortion	% 25 max. (power ratio: 1; rated load)
Insulation resistance	MΩ 10 min. (500V meggar)
Insulation class	Class E
Circuit breaker capacity	T and A: 25A E, G, S and U: 11.5A
Maximum allowable load	% 110
Fuel consumption, rated load	lit./H (US gal/H, Imp. gal/H) approx. 2 (0.53, 0.44)
Continuous operating time without refueling	H approx. 4.3
Motor starting	W (Watt) 750 (Condenser start compressor)
Fuel tank capacity	lit. (US gal., Imp. gal.) 9.2 (2.4, 2.0)
DC fuse capacity	A 15



## ENGINE

Item	Specification
Model	G65
Cooling system - cycle	Air cooled, 4-cycle
No. of cylinders - arrangement	Single, vertical
Valve arrangement	Side valve
Combustion chamber	L-head
Total piston displacement	cc (cu. in.) 240 (14.65)
Bore X stroke	mm (in.) 72 X 59 (2.835 x 1.969)
Rated output	PS/rpm 5.0/3,600
Maximum output	PS/rpm 6.8/4,000
Maximum torque	kg-m (lb.ft)/rpm 1.25(9.03)/3,000
Fuel consumption ratio	g/PS-H (oz/PS-H) 300 (10.6)
Compression ratio	6.1
Compression pressure	kg/cm <sup>2</sup> (psi)/rpm 7.5(106.7)/1,000
Ignition system	Spark ignition
Spark timing	25° BTDC
Spark plug	B-6HS (BR-6HS) NGK
Carburetor	Horizontal, butterfly
Air cleaner	Semi-dry polyurethane foam element
Governor	Mechanical centrifugal
Lubrication system	Wet sump
Oil pan capacity	lit. (US pt., Imp. pt.) 0.82 (1.7, 1.4)
Starting system	Recoil starter
Fuel oil	Regular gasoline

Specifications are subject to change without notice.



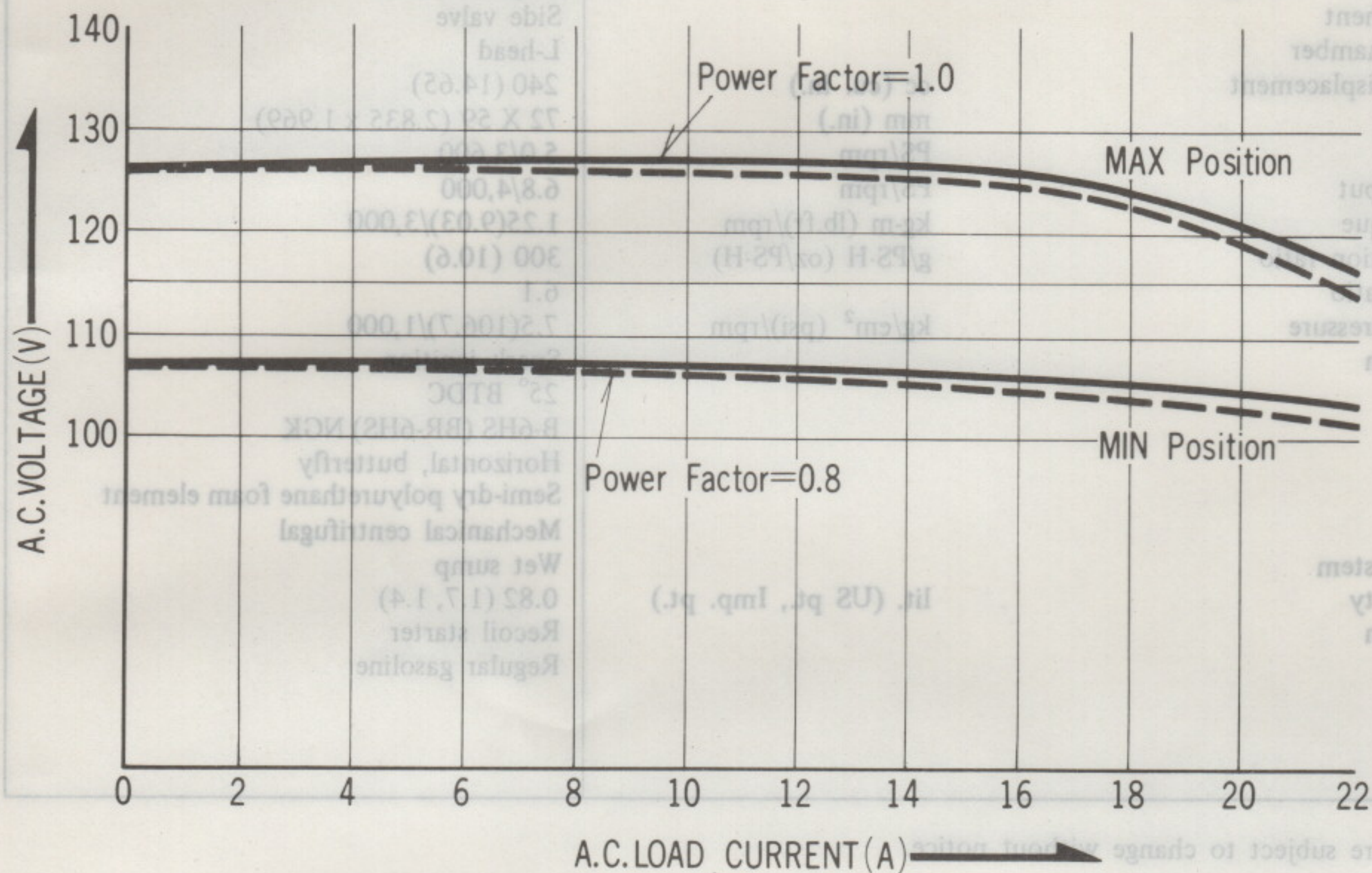


## 4. PERFORMANCE CURVES

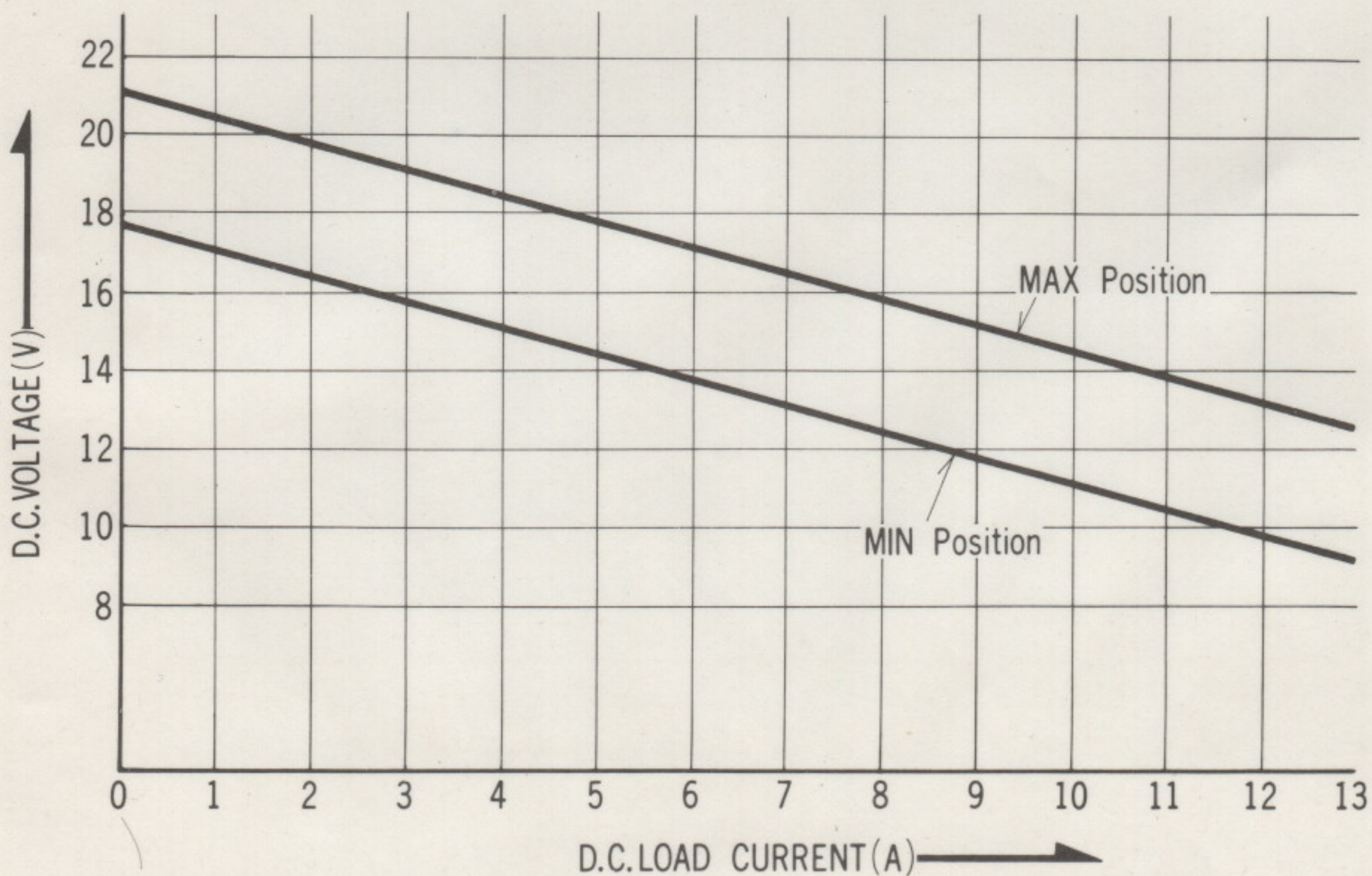
The performances of the generator under average conditions are shown. These may vary in some degrees depending on the ambient temperature and humidity. The output voltage will be higher than under usually conditions when the generator is still cold immediately after the engine starts.

E2500T

### A.C. EXTERNAL CHARACTERISTIC CURVE



### D.C. EXTERNAL CHARACTERISTIC CURVE

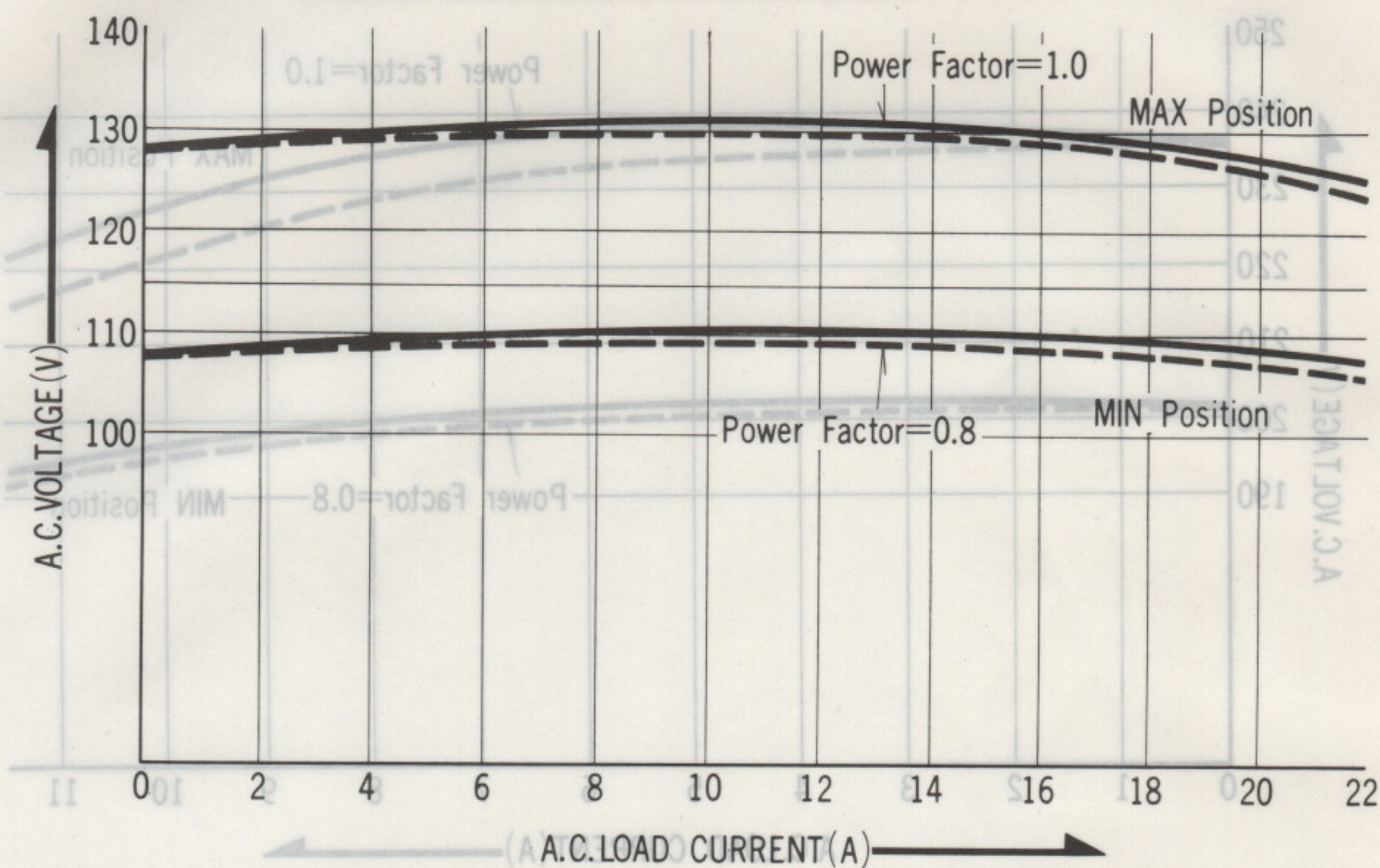




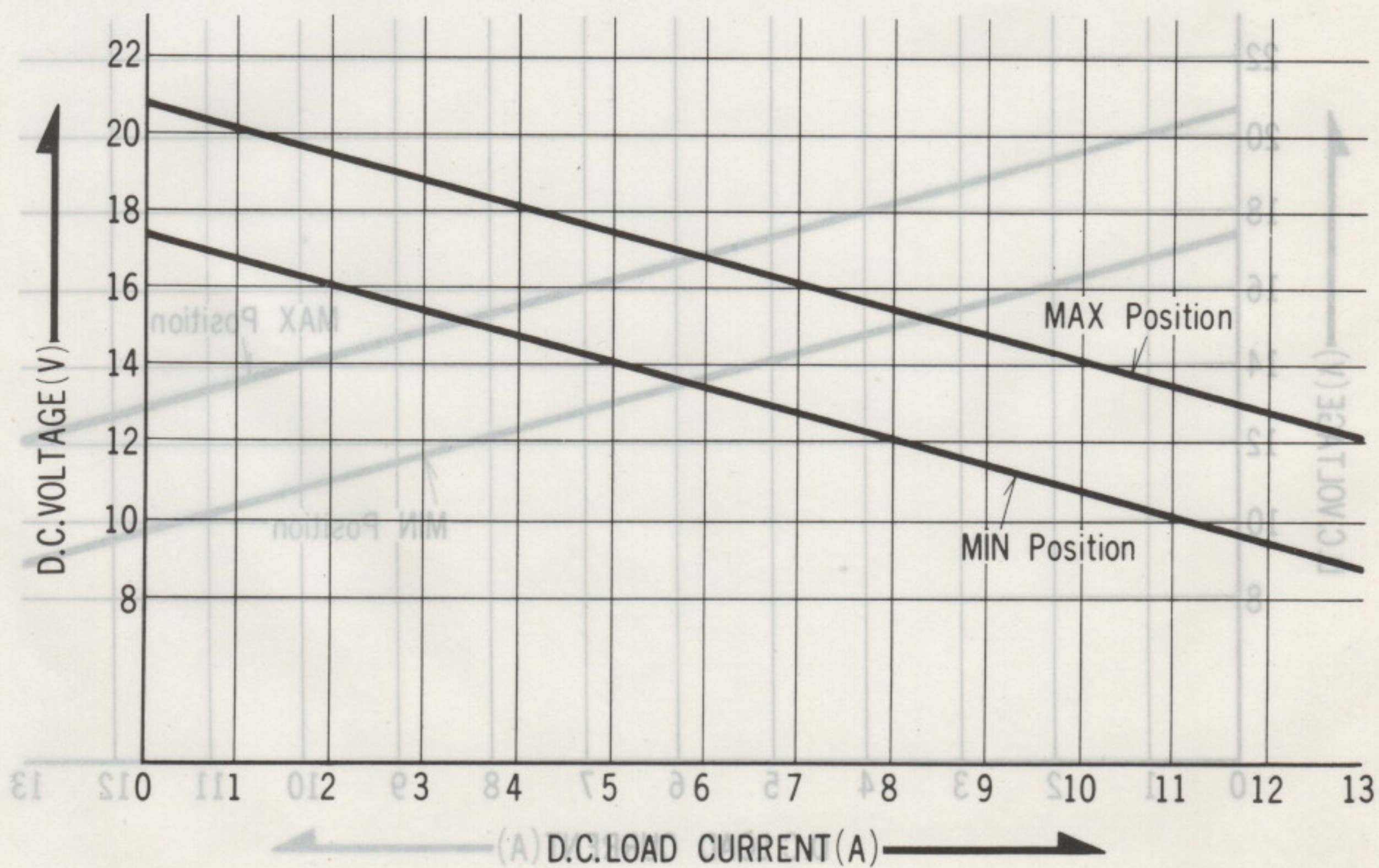
E2500A

E2500E AND C

## A.C. EXTERNAL CHARACTERISTIC CURVE

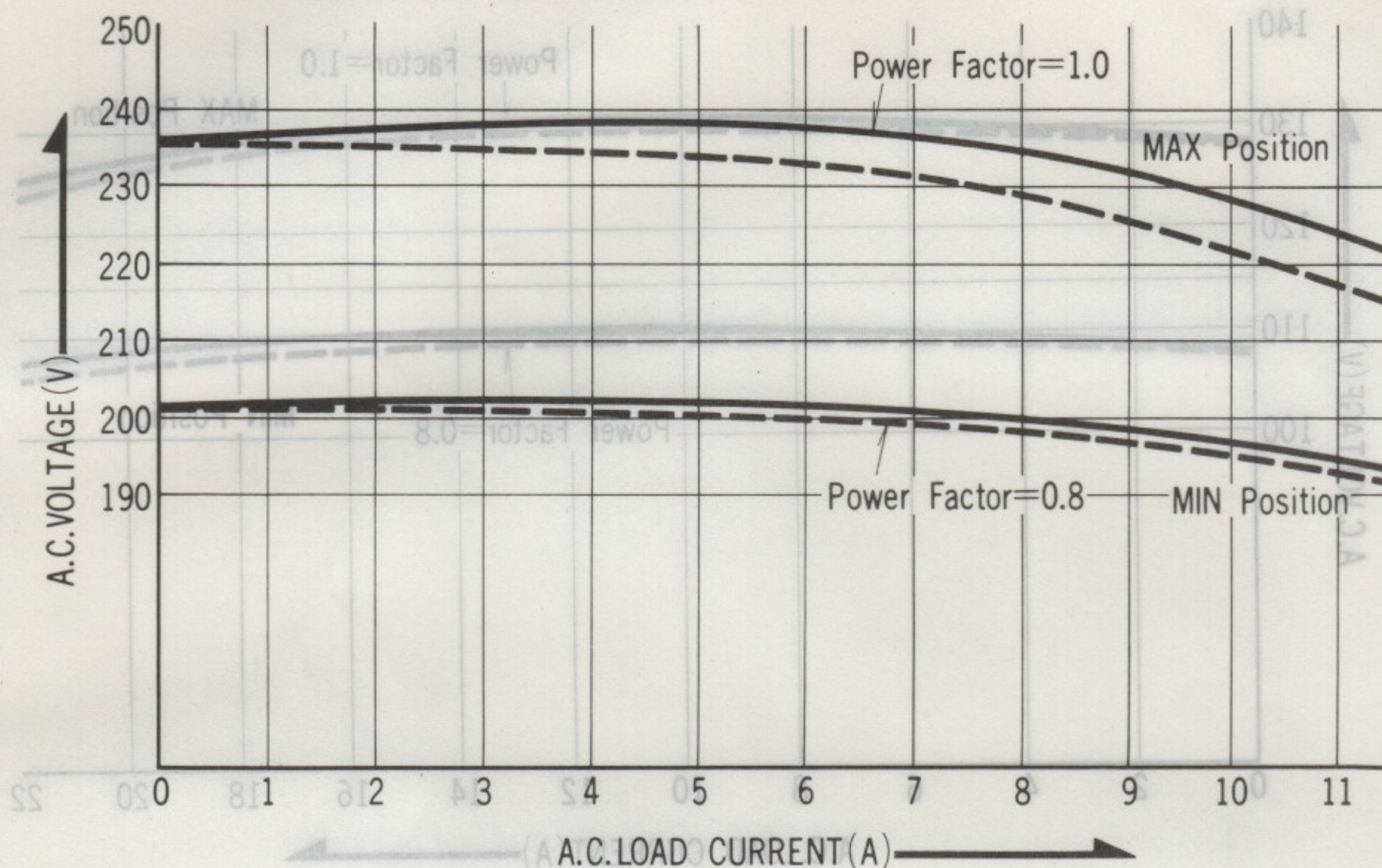


## D.C. EXTERNAL CHARACTERISTIC CURVE

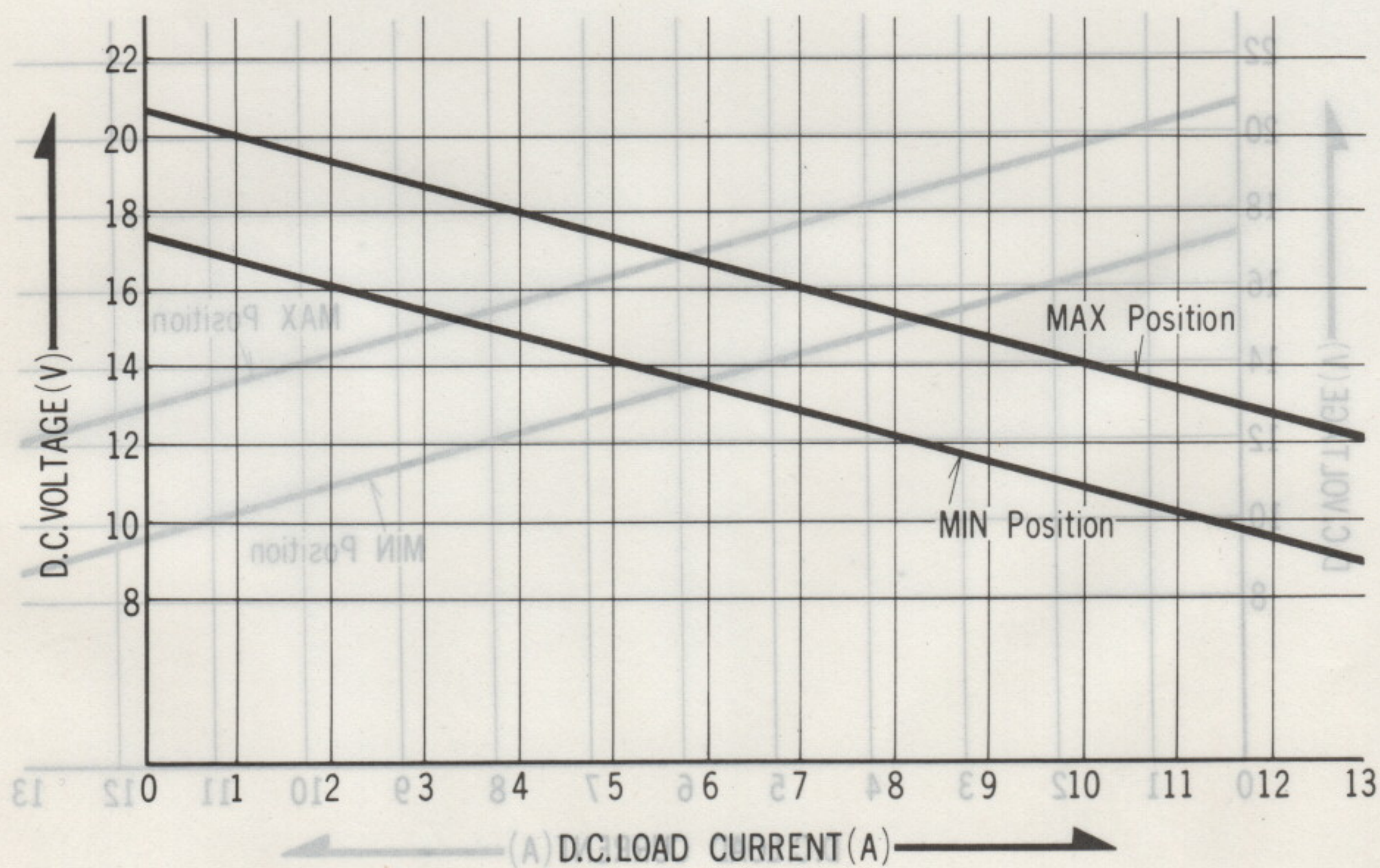




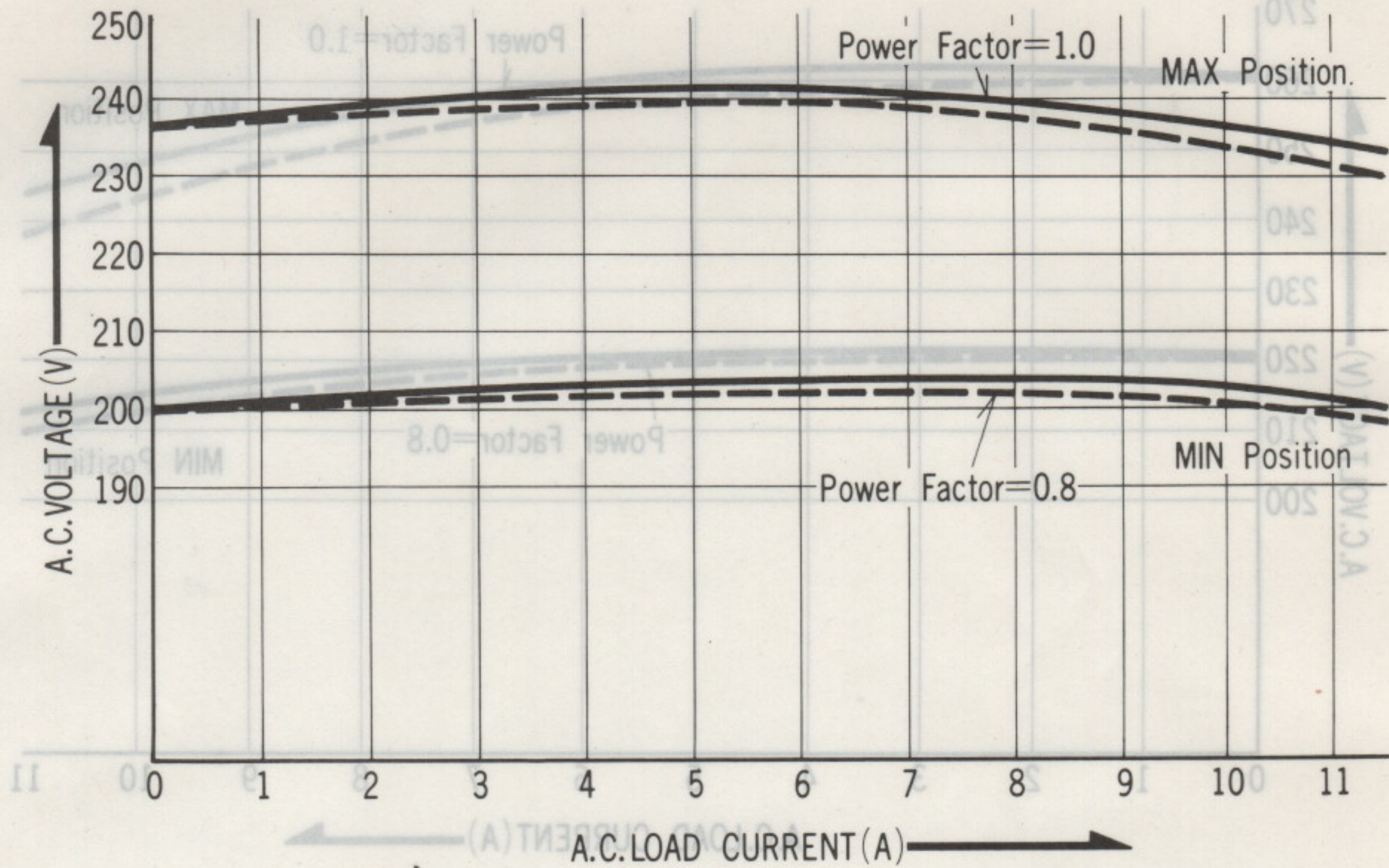
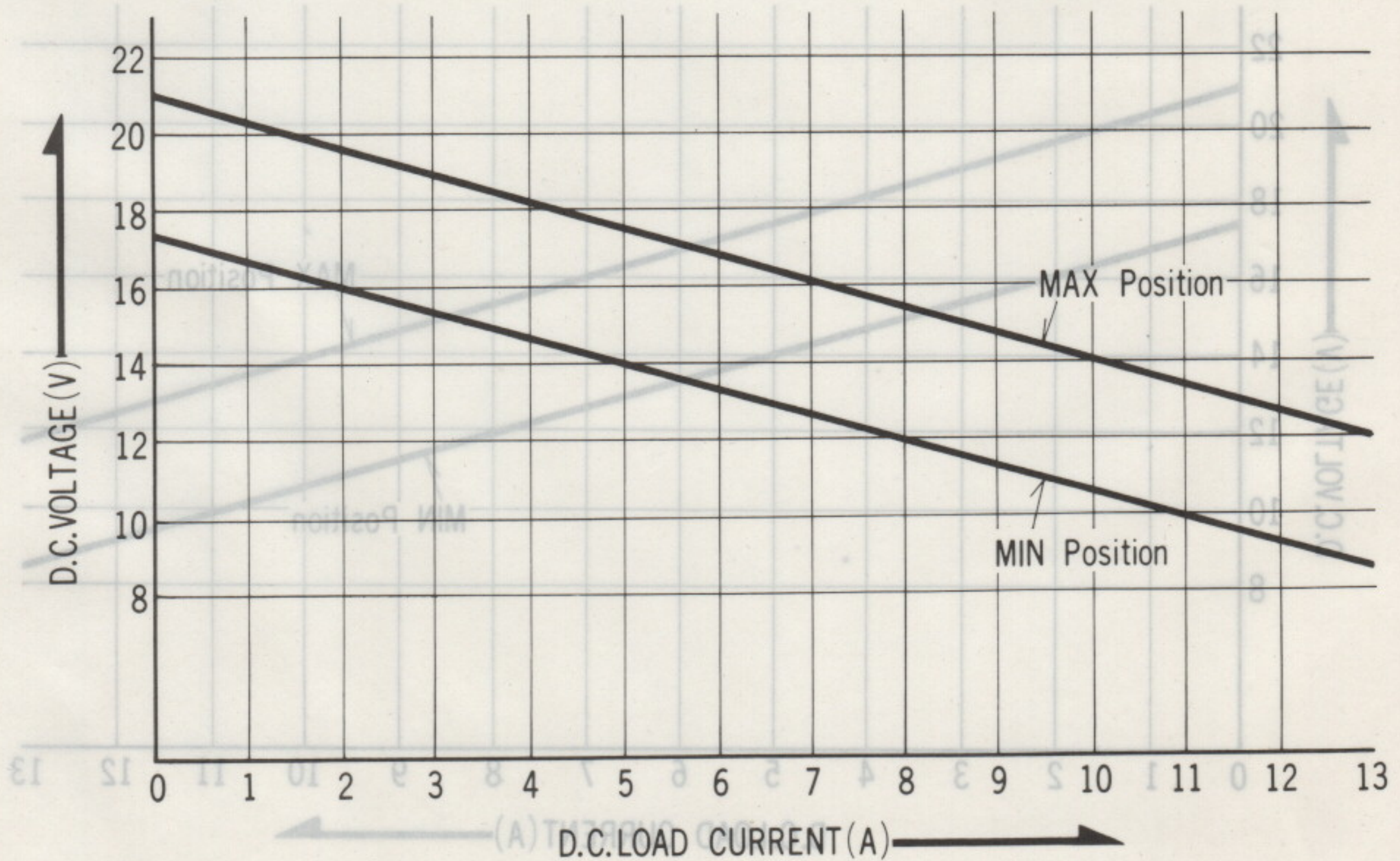
## A.C. EXTERNAL CHARACTERISTIC CURVE



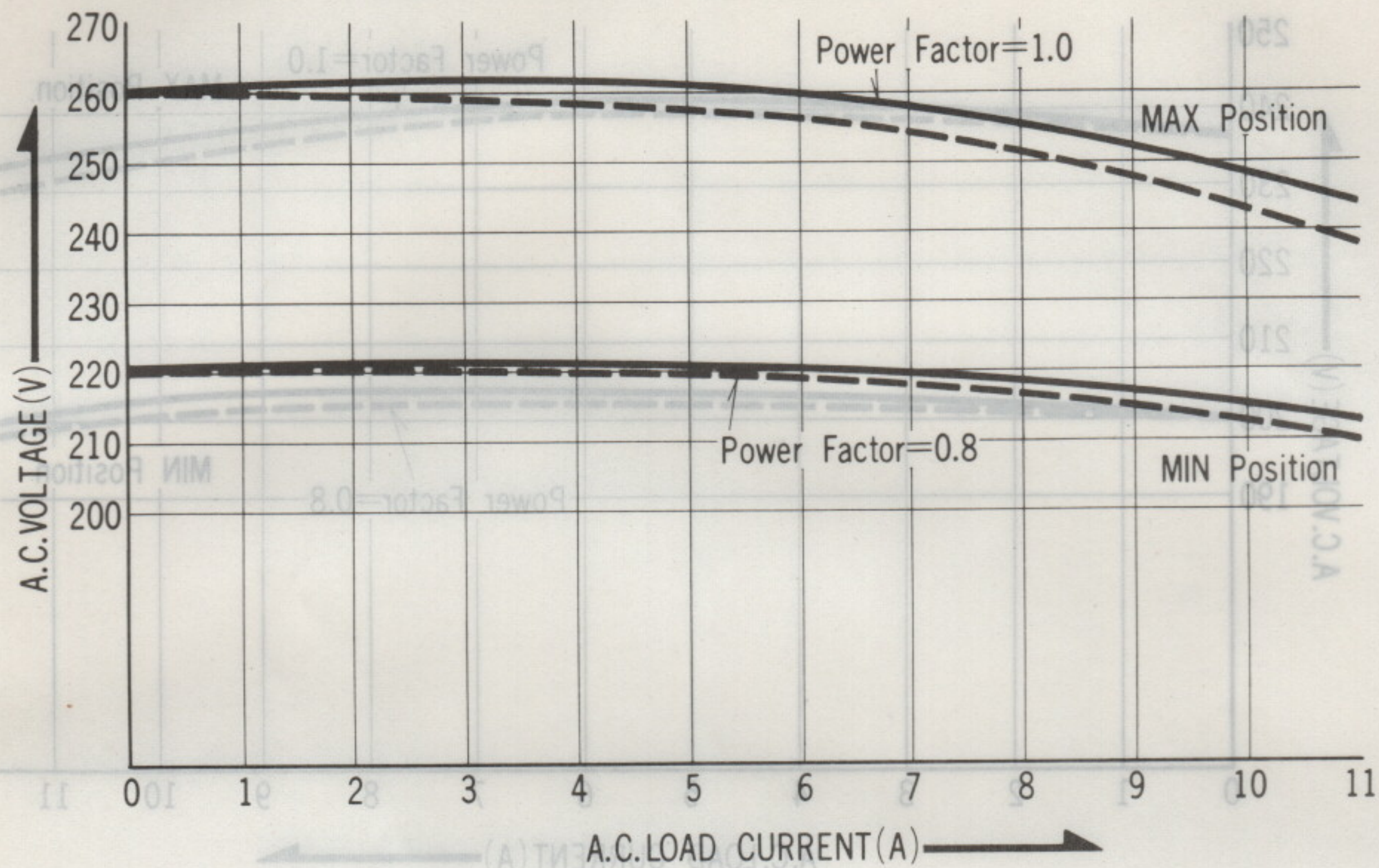
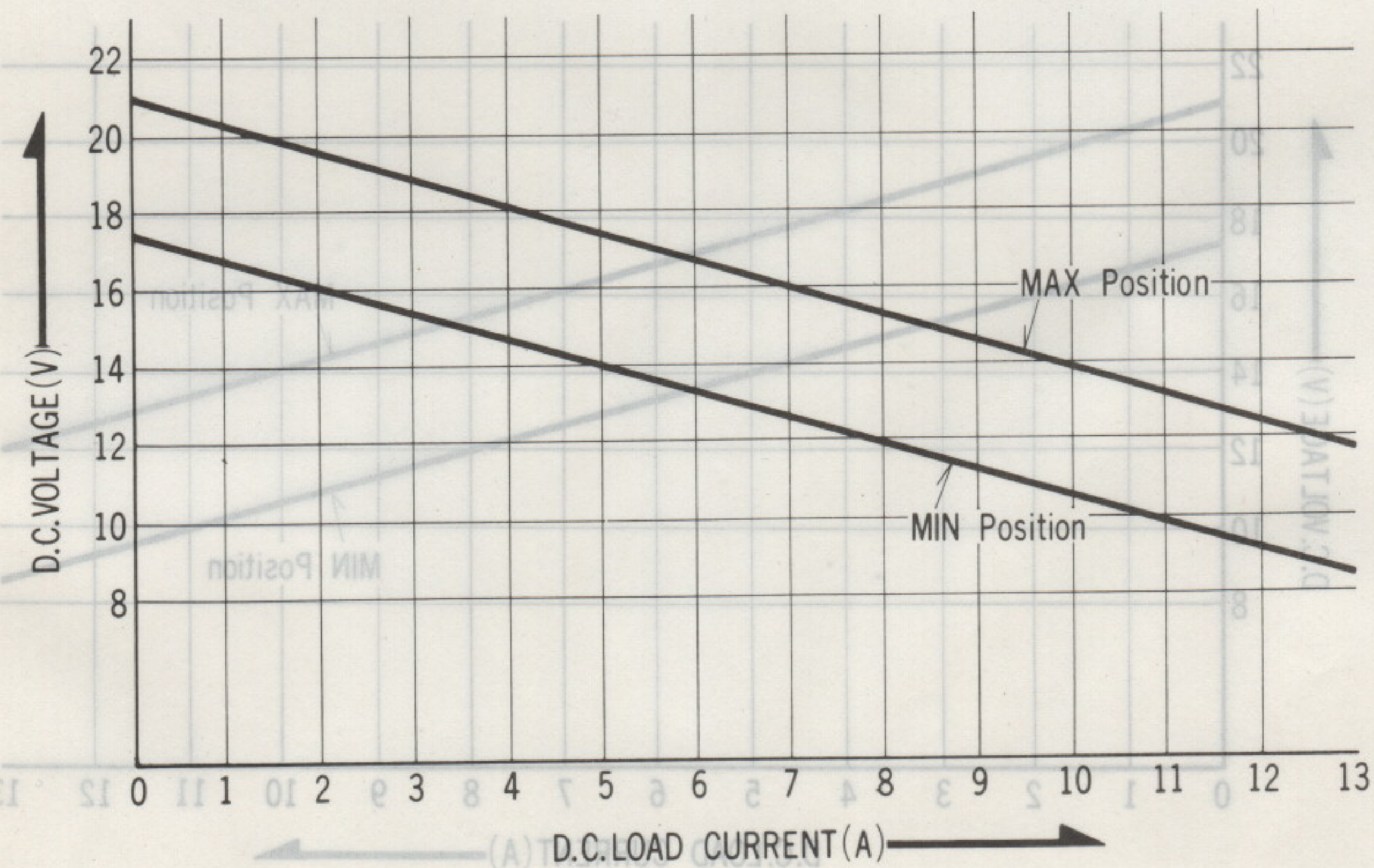
## D.C. EXTERNAL CHARACTERISTIC CURVE





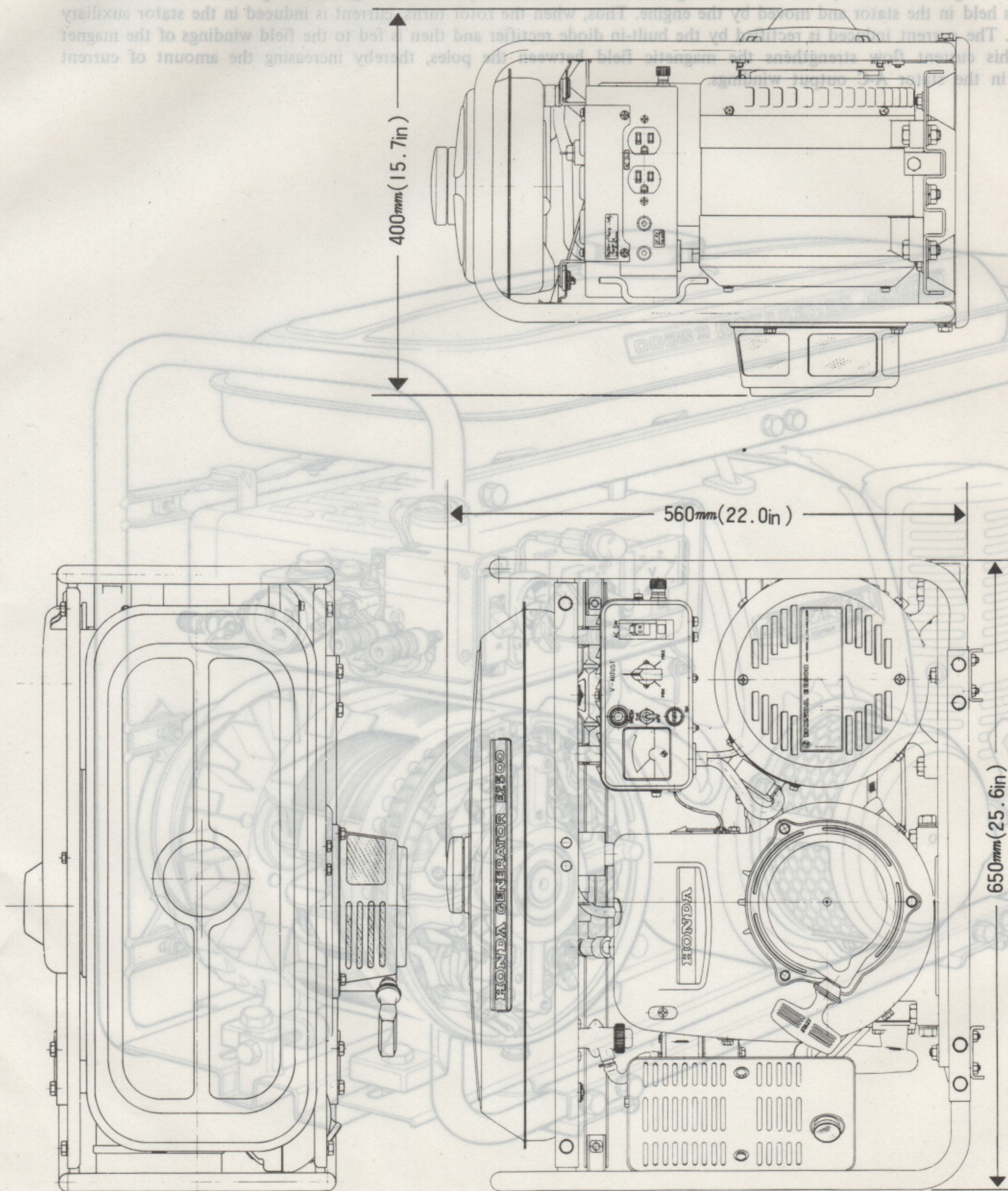
A.C. EXTERNAL CHARACTERISTIC CURVED.C. EXTERNAL CHARACTERISTIC CURVE



A.C. EXTERNAL CHARACTERISTIC CURVED.C. EXTERNAL CHARACTERISTIC CURVE



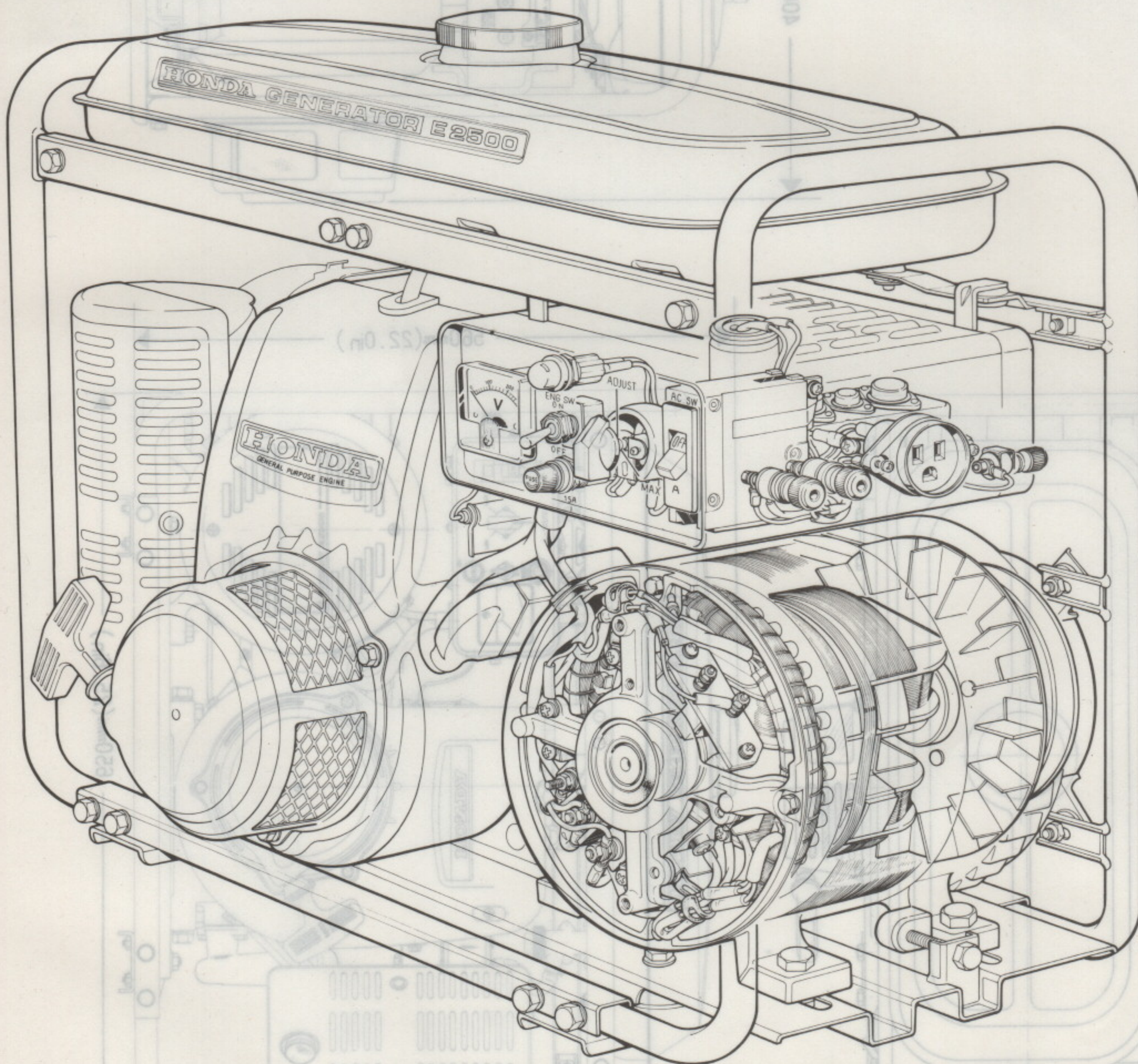
## 5. DIMENSIONAL DRAWING





## 6. CONSTRUCTION

The generator is a self-exciting, two-pole, revolving magnetic field type in that the magnetic-strength between the two poles of a magnet is aided by the field windings assembled around the poles. The magnet is integrated with a rotor which in turn is held in the stator and moved by the engine. Thus, when the rotor turns, current is induced in the stator auxiliary windings. The current induced is rectified by the built-in diode rectifier and then is fed to the field windings of the magnet poles. This current flow strengthens the magnetic field between the poles, thereby increasing the amount of current induced in the stator A-C output windings.

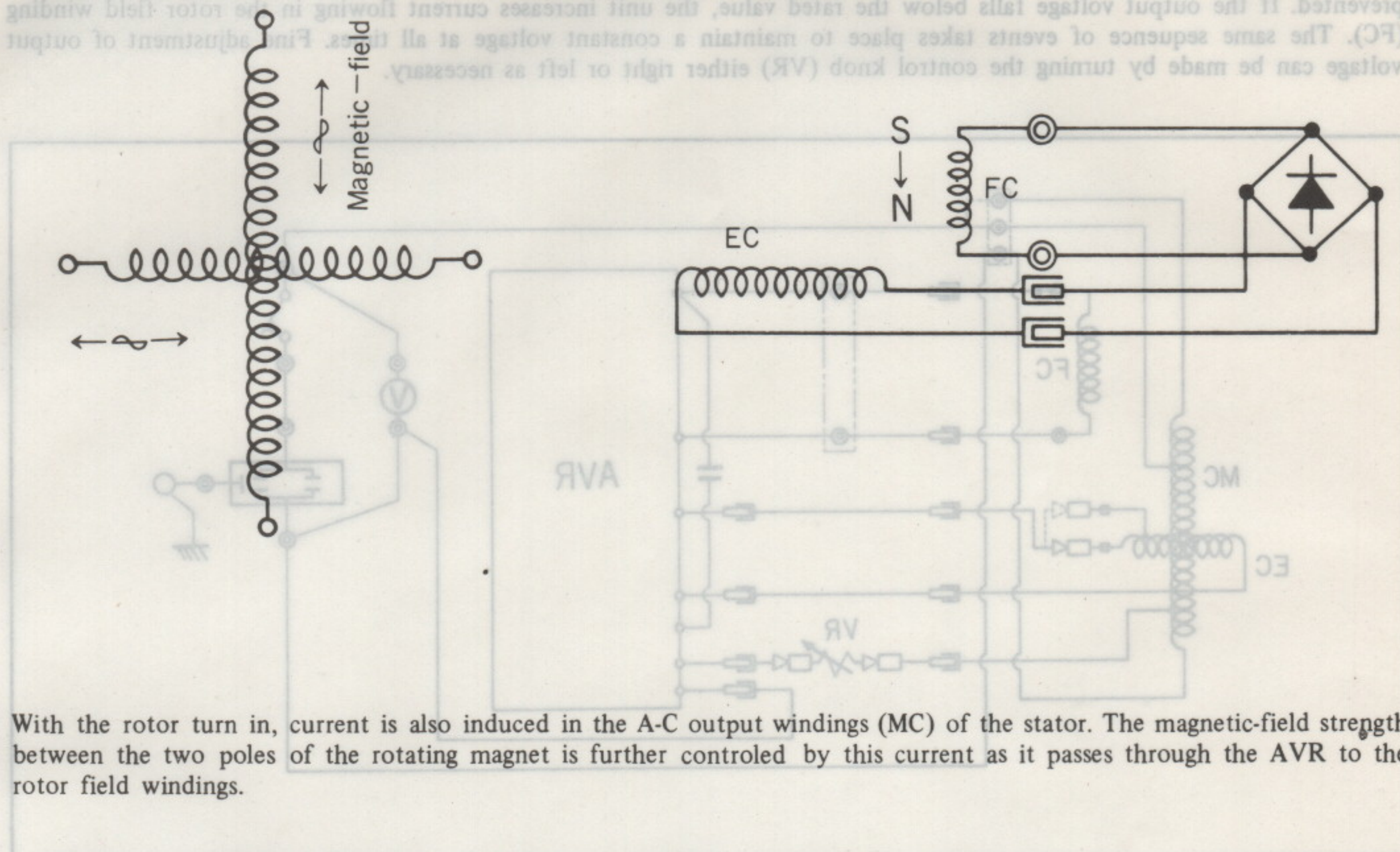




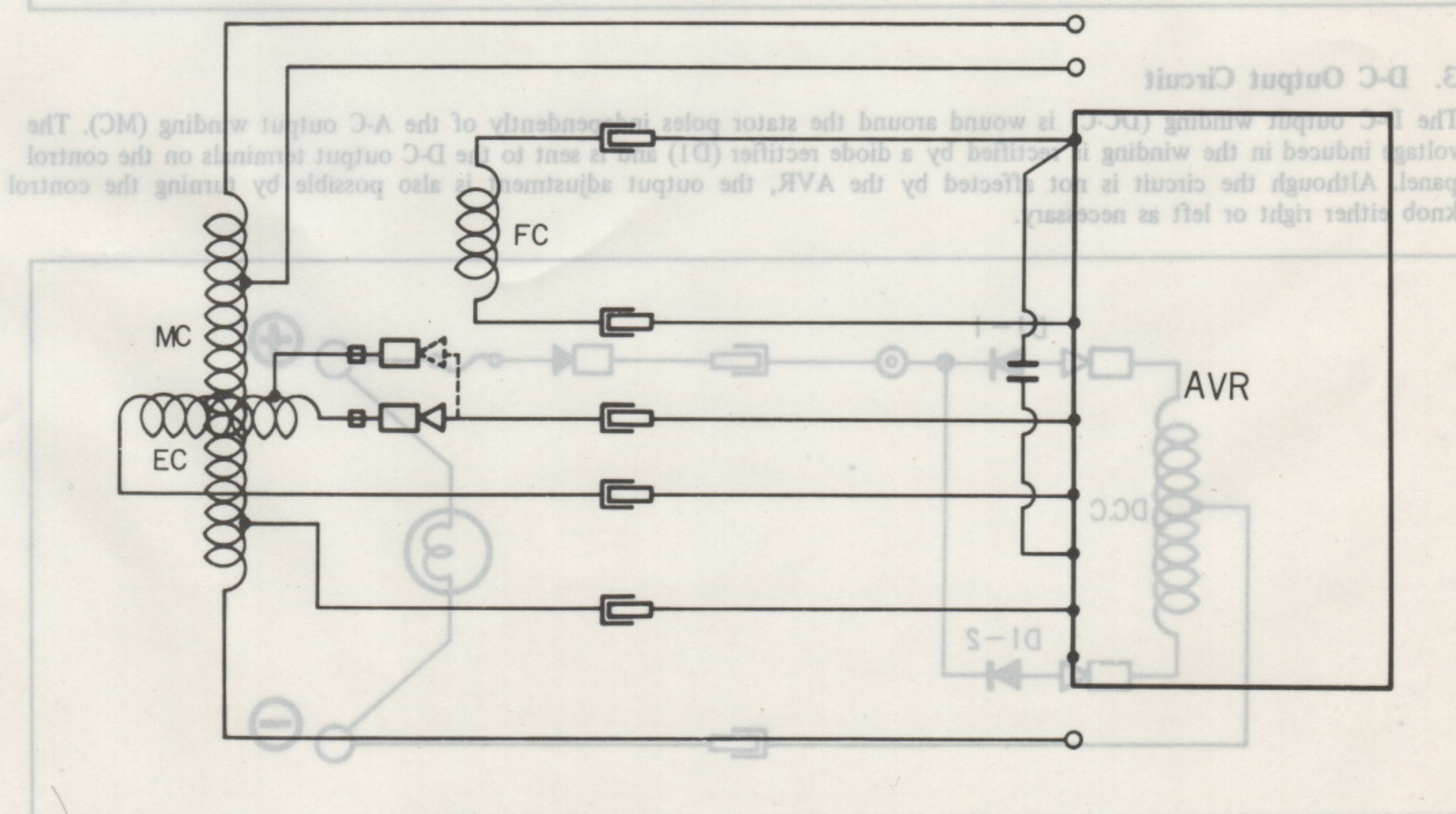
## GENERATOR OPERATION

### 1. Self-exciting Circuit

As the engine starts, the rotor turns. This induces current in the auxiliary windings (EC) assembled around the poles of the stator (several volts, A-C). To obtain sufficient magnetic-field strength for required generator output, the current induced is rectified and fed to the field windings (FC) around the two poles of the rotating magnet.



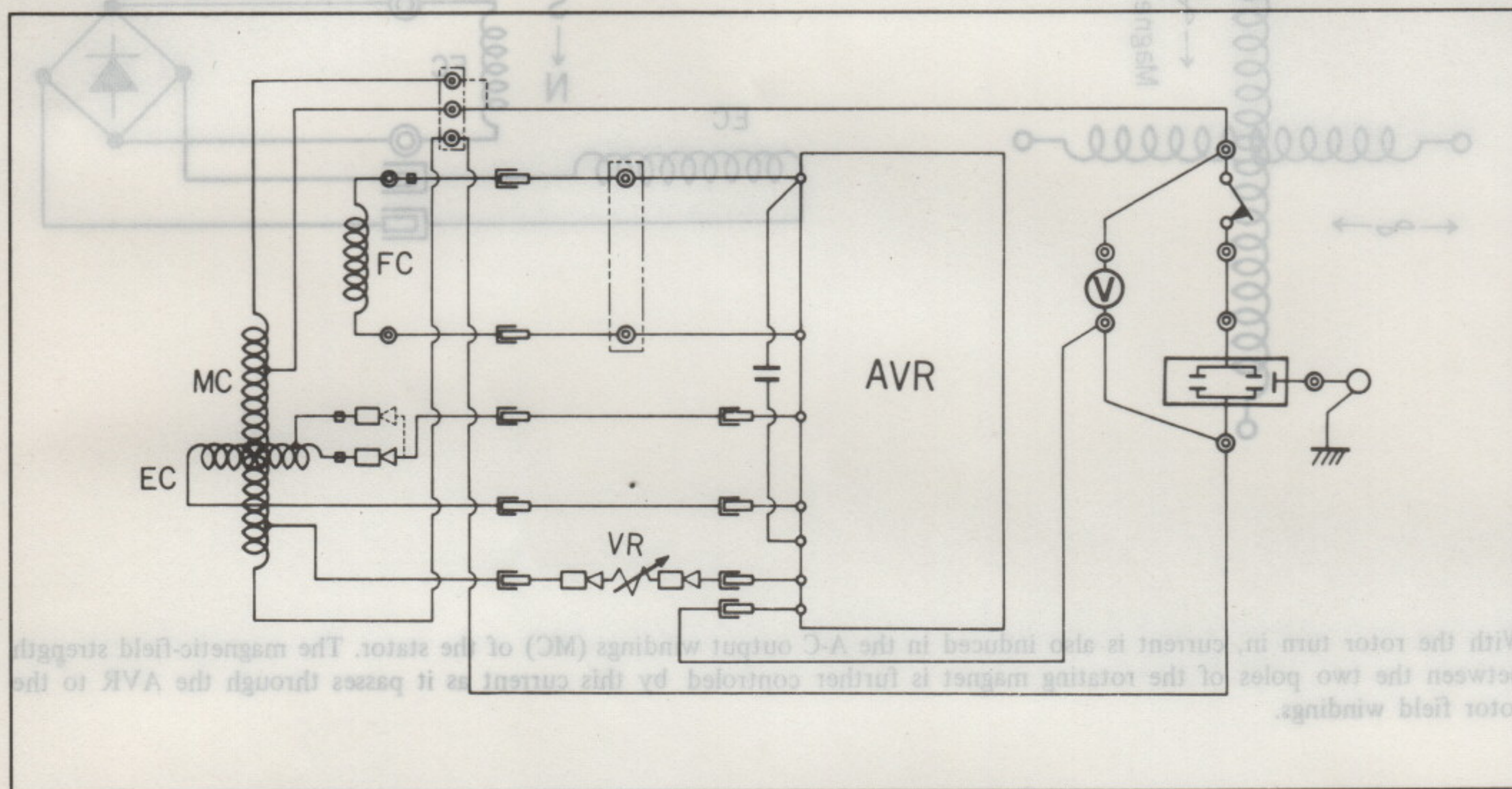
With the rotor turn in, current is also induced in the A-C output windings (MC) of the stator. The magnetic-field strength between the two poles of the rotating magnet is further controlled by this current as it passes through the AVR to the rotor field windings.





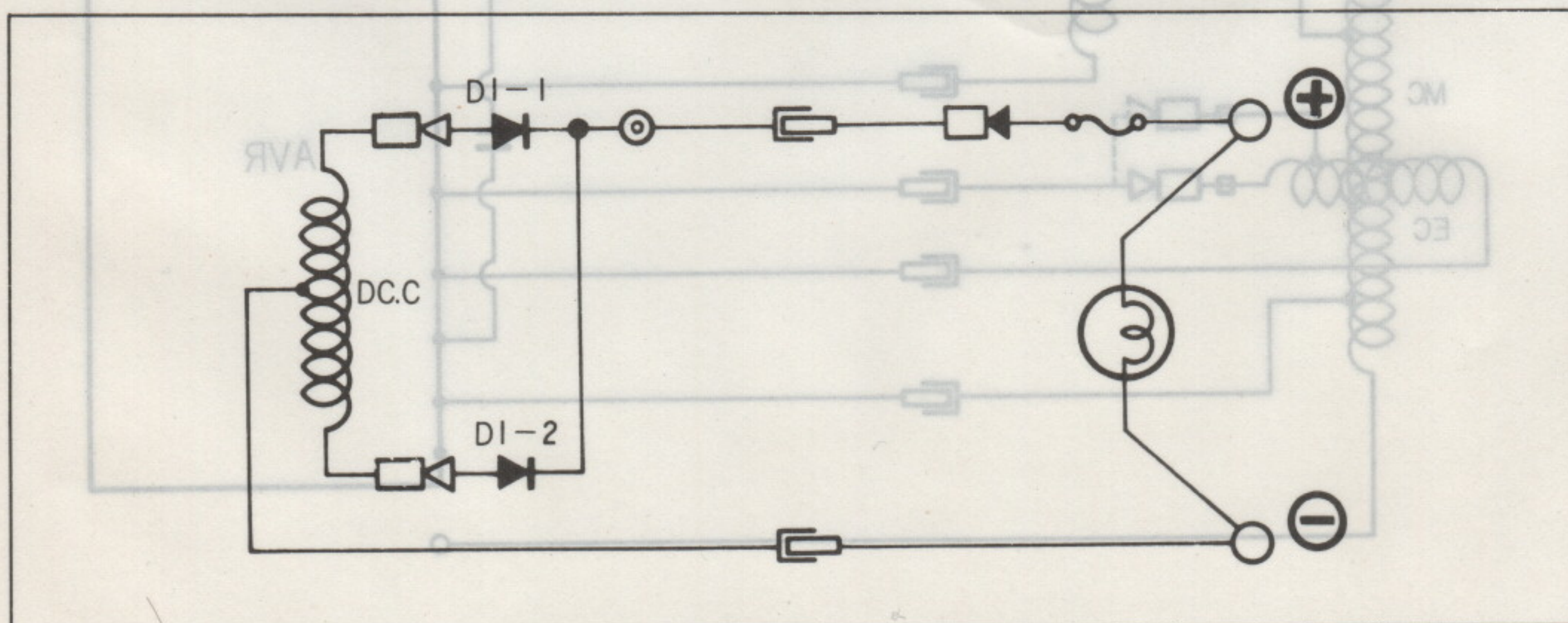
## 2. A-C Output Circuit and AVR (Automatic Voltage Regulator)

As current flows through the rotor field winding (FC), voltage is induced in the stator A-C output winding (MC) by the magnetic field produced around the two poles of the rotor magnet. The faster the rotor turns, the greater the voltage will be. The voltage will also increase as the current flowing through the rotor field winding (FC) increases. The output voltage is then available at the output receptacle on the control panel. On E2500 the output reaches the predetermined maximum at 2,000 – 2,500 rpm. Therefore, in order to keep it from increasing beyond the safe limit at 3,000 rpm (50Hz) or 3,600 rpm (60Hz), an automatic voltage regulator (AVR) is provided. The AVR reduces current flowing through the rotor field winding (FC), so that damaging high-voltage and high-current output in the A-C output winding (MC) is prevented. If the output voltage falls below the rated value, the unit increases current flowing in the rotor field winding (FC). The same sequence of events takes place to maintain a constant voltage at all times. Fine adjustment of output voltage can be made by turning the control knob (VR) either right or left as necessary.



## 3. D-C Output Circuit

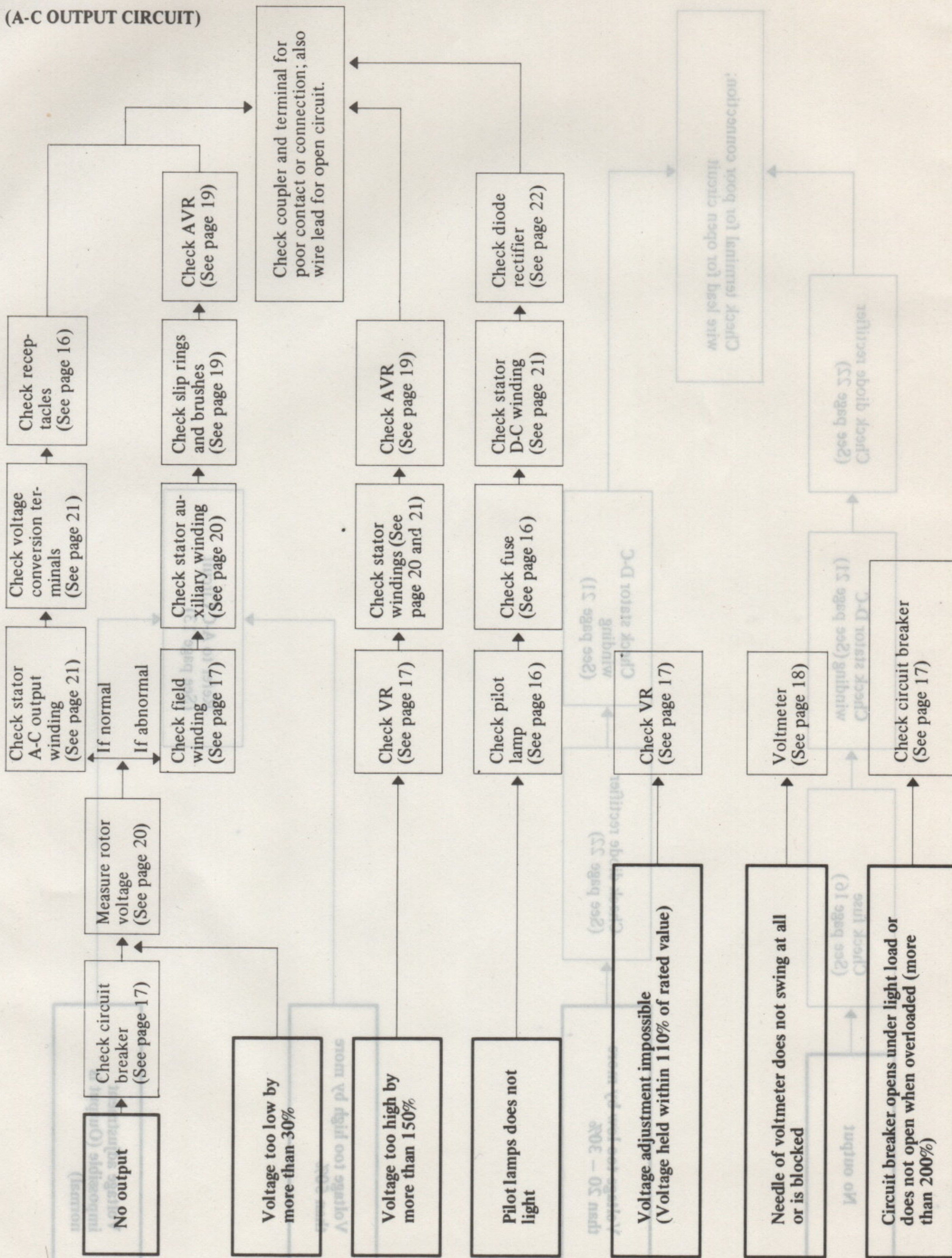
The D-C output winding (DC-C) is wound around the stator poles independently of the A-C output winding (MC). The voltage induced in the winding is rectified by a diode rectifier (D1) and is sent to the D-C output terminals on the control panel. Although the circuit is not affected by the AVR, the output adjustment is also possible by turning the control knob either right or left as necessary.





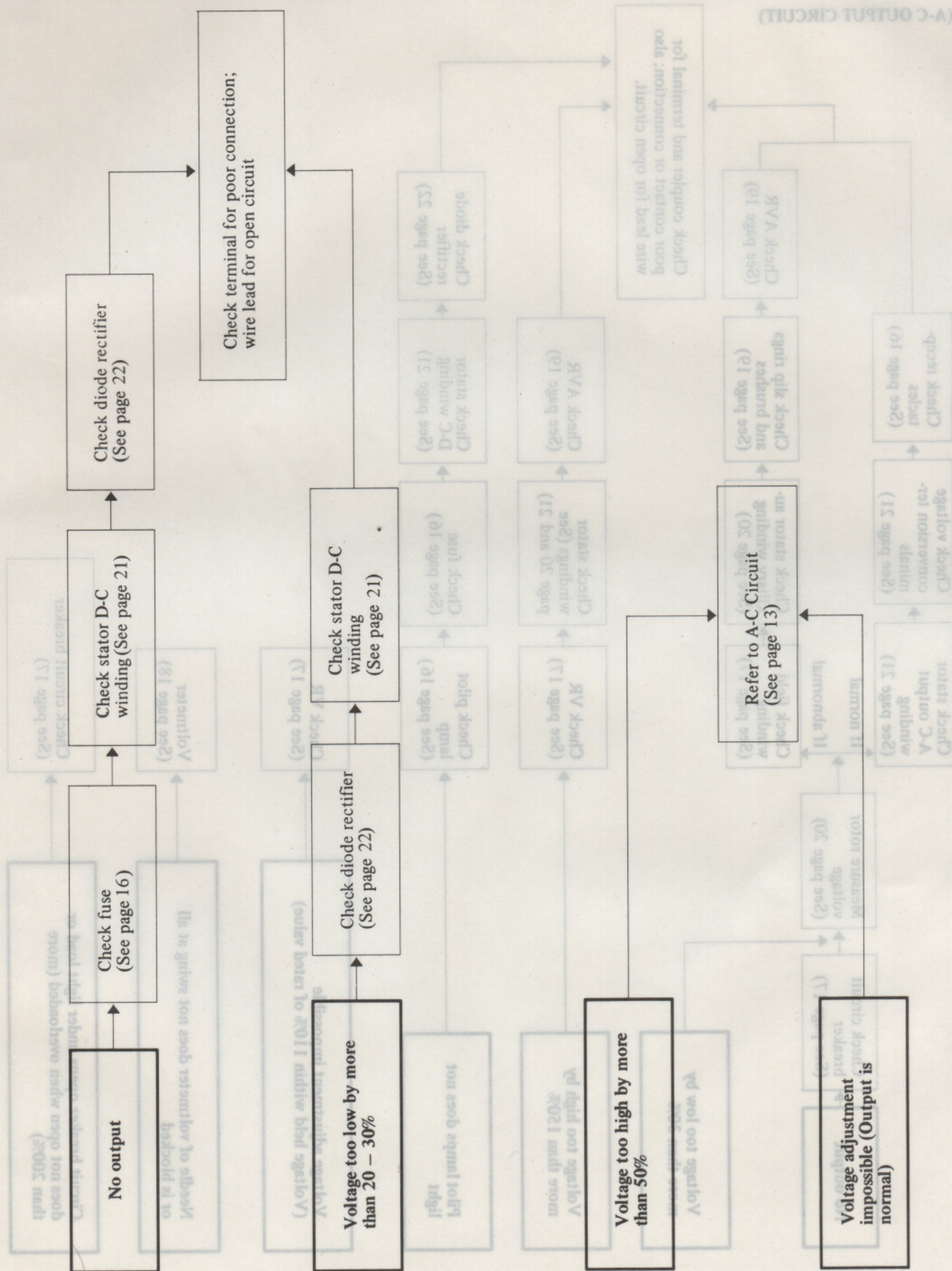
## 7. TROUBLE SHOOTING

## (A-C OUTPUT CIRCUIT)





## (D-C OUTPUT CIRCUIT)

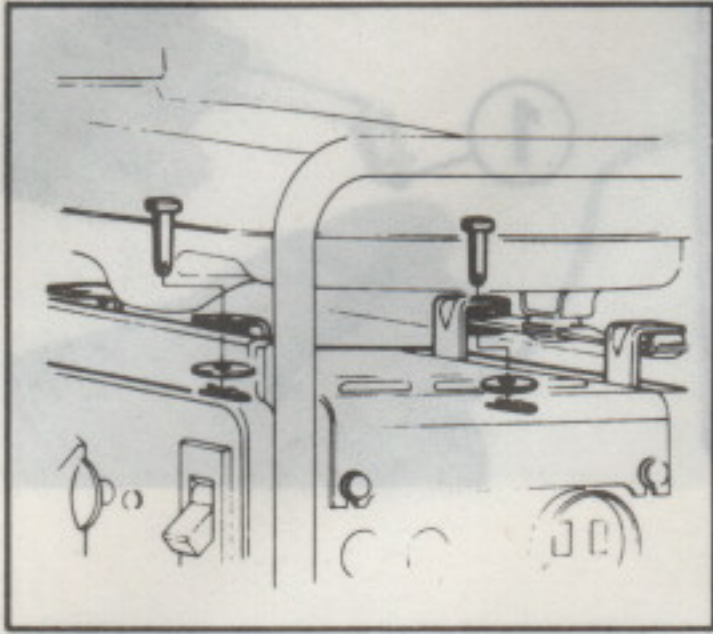




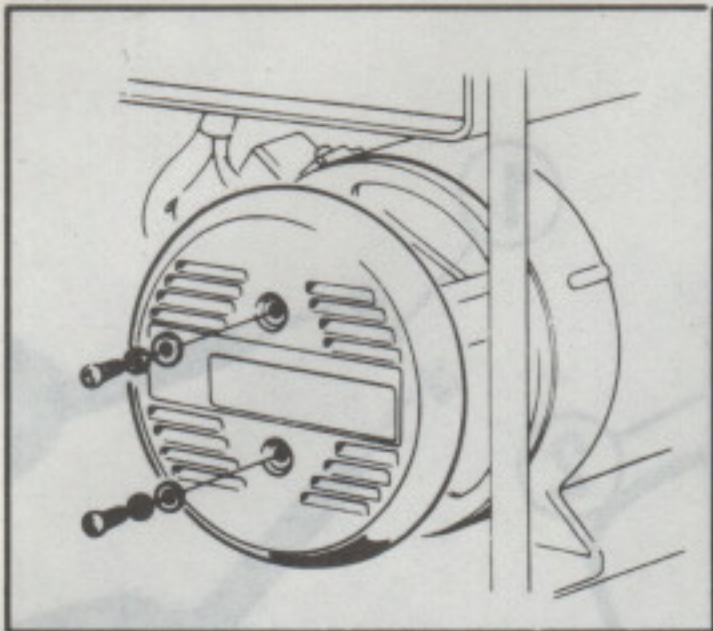
## 8. GENERATOR REMOVAL AND DRIVE BELT ADJUSTMENT

### GENERATOR REMOVAL

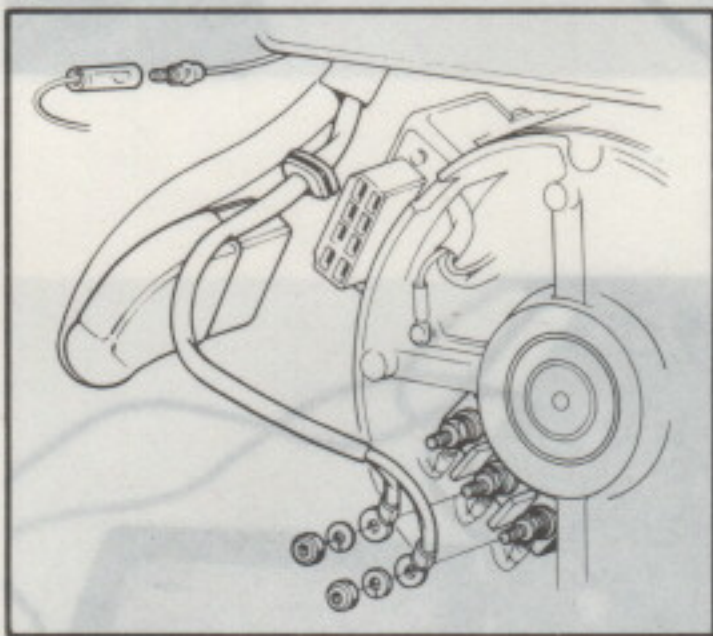
(1) Control box mounting pins



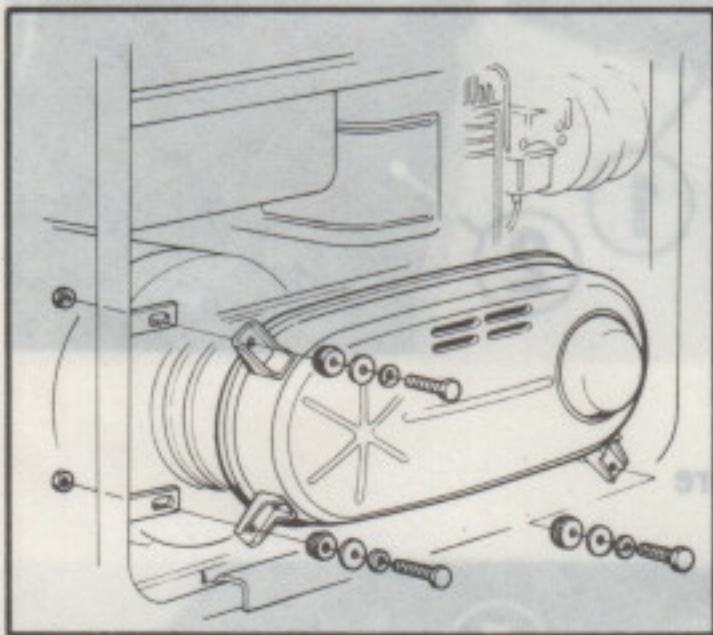
(2) End cover



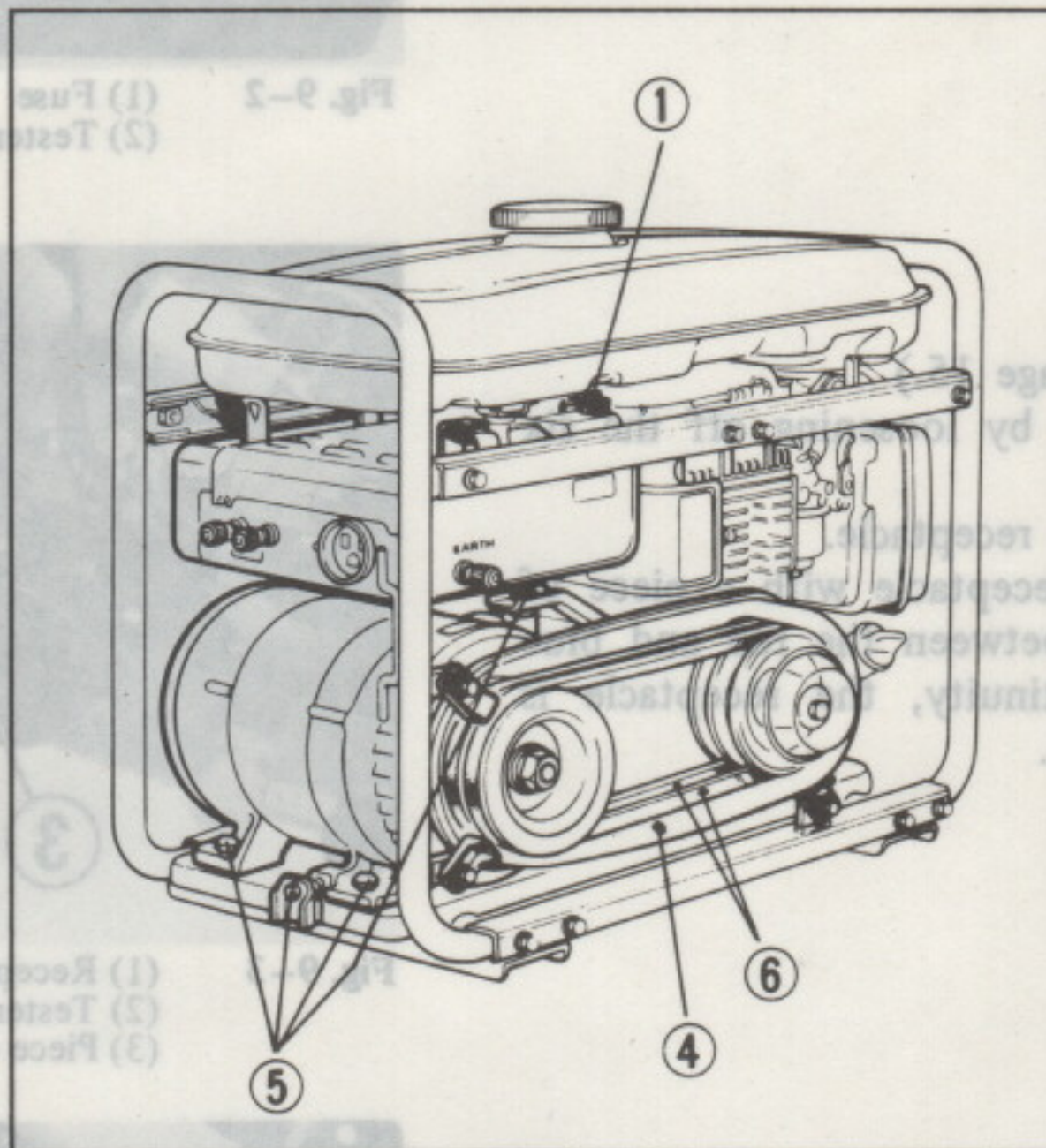
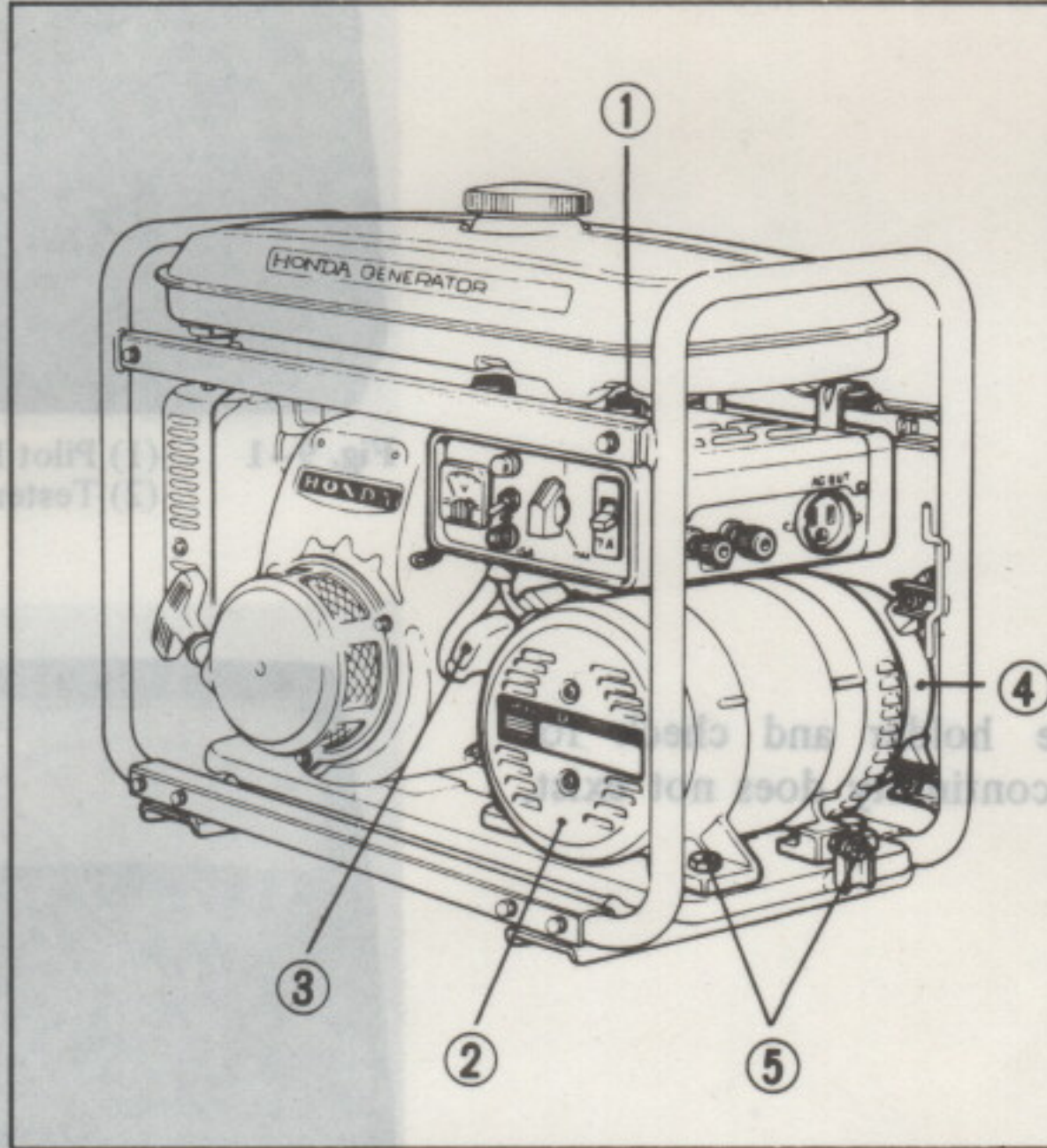
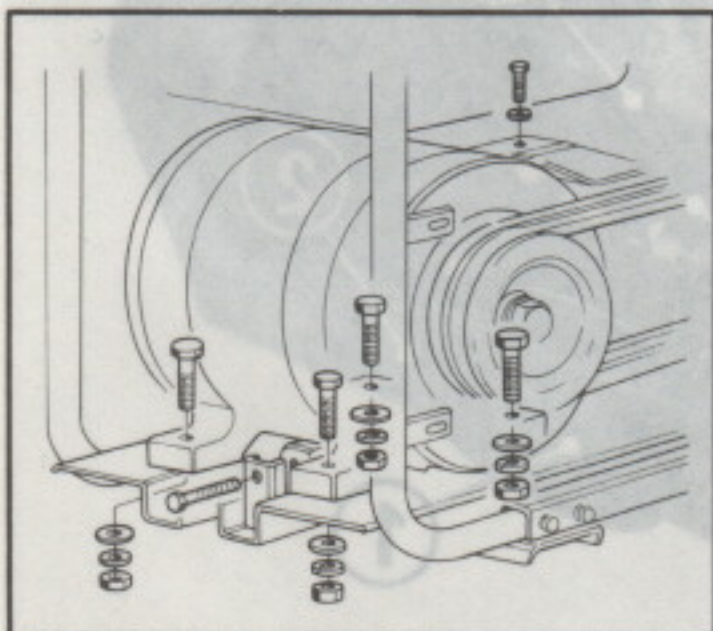
(3) Wire lead connections



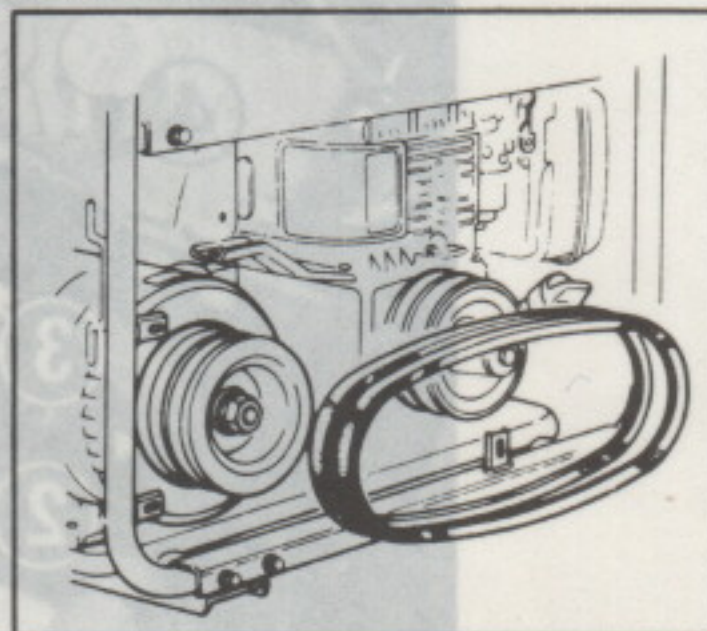
(4) Drive belt cover



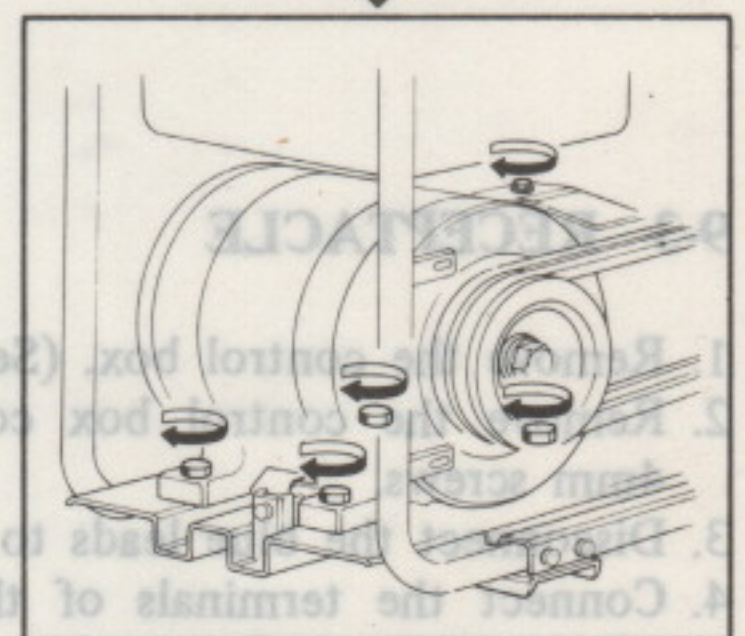
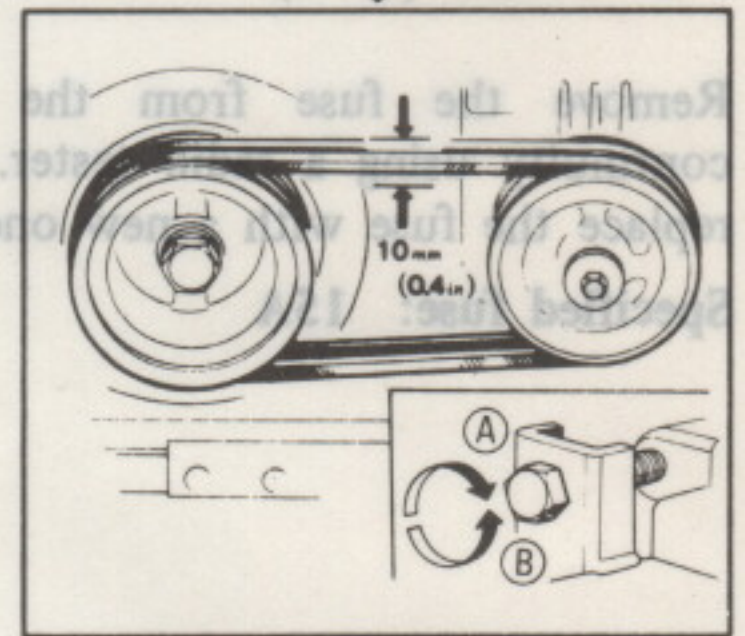
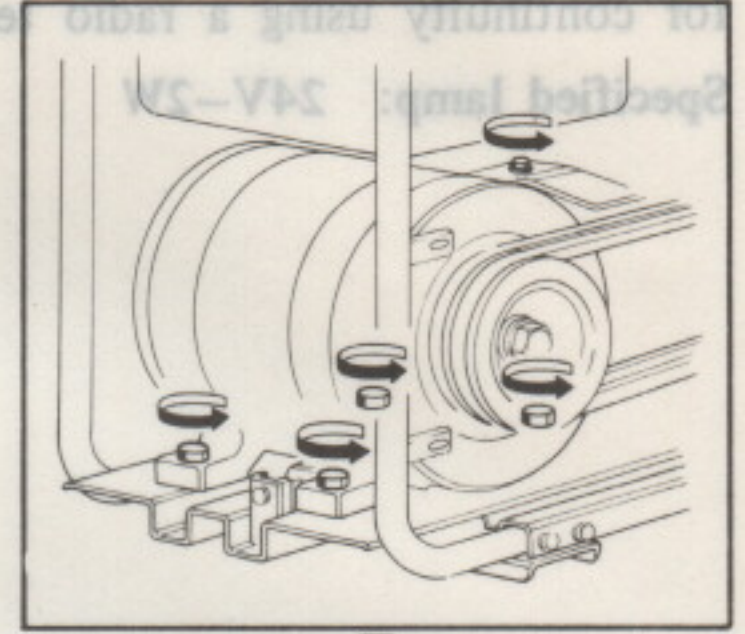
(5) Generator mount bolts



(6) Drive belts



### DRIVE BELT ADJUSTMENT



**Note:** Replace drive belts as a set when replacement is required.

Generator mount bolts tightening torque:

10mm bolts — 400 — 500 kg-cm  
(29.0 — 36.2 lbs-ft)

8mm bolts — 200 — 280 kg-cm  
(14.5 — 20.1 lbs-ft)

**NOTE:** To install, reverse the removal procedure.



## 9. INSPECTION AND REPAIR

### 9-1 PILOT LAMP

Remove the pilot lamp from the lamp holder and check for continuity using a radio tester.

Specified lamp: 24V-2W

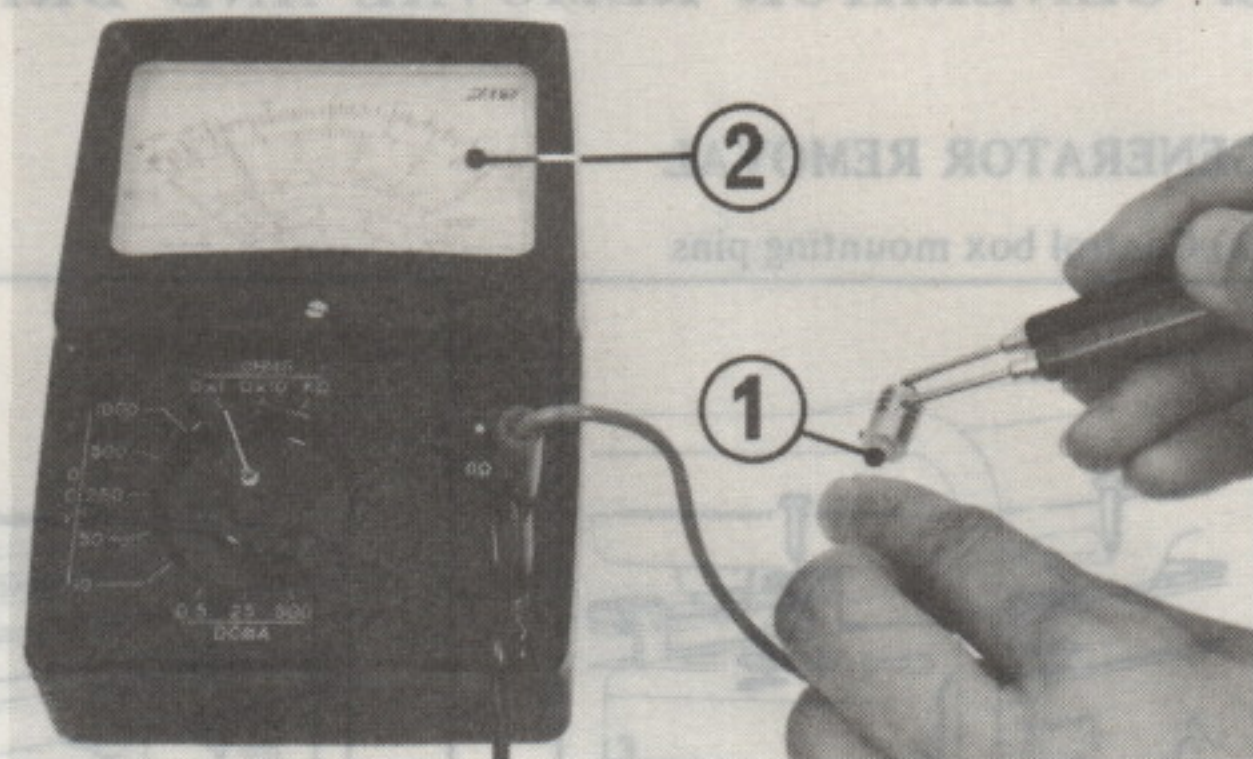
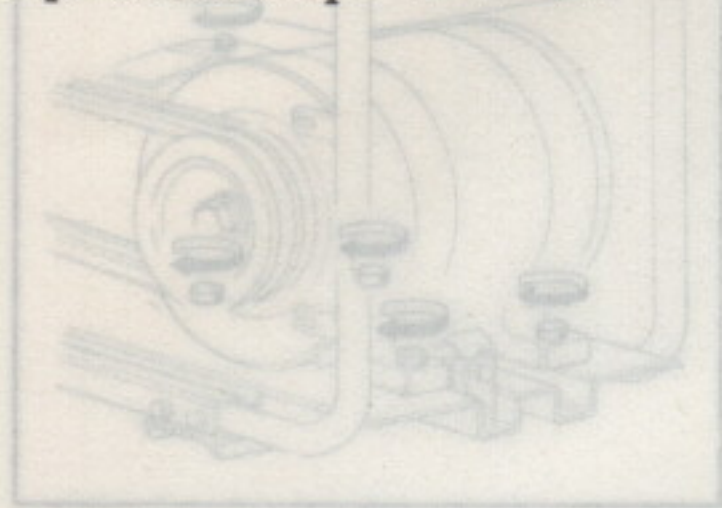


Fig. 9-1 (1) Pilot lamp  
(2) Tester

### 9-2 FUSE (D-C)

Remove the fuse from the fuse holder and check for continuity using a radio tester. If continuity does not exist, replace the fuse with a new one.

Specified fuse: 15A

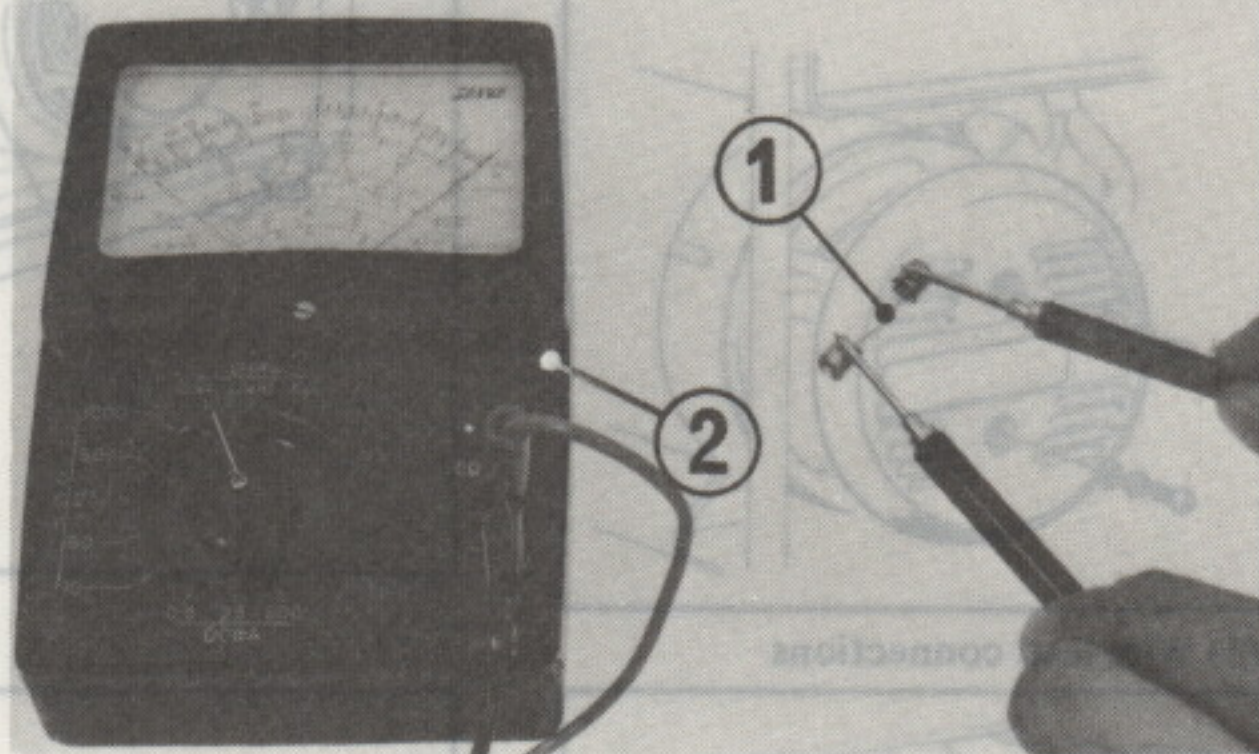
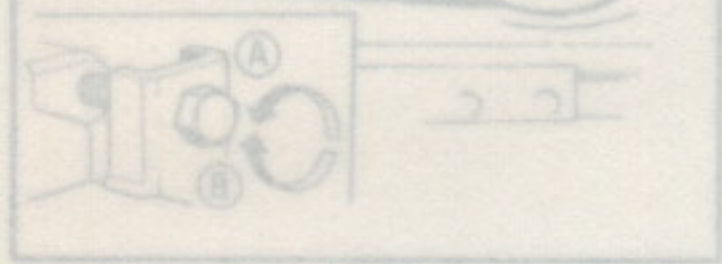


Fig. 9-2 (1) Fuse  
(2) Tester

### 9-3 RECEPTACLE

1. Remove the control box. (See page 15.)
2. Remove the control box cover by loosening off the six 4mm screws.
3. Disconnect the blue leads to the receptacle.
4. Connect the terminals of the receptacle with a piece of wire and check for continuity between the red and blue terminals. If there is no continuity, the receptacle is defective, calling for replacement.

is required when replacement is required.

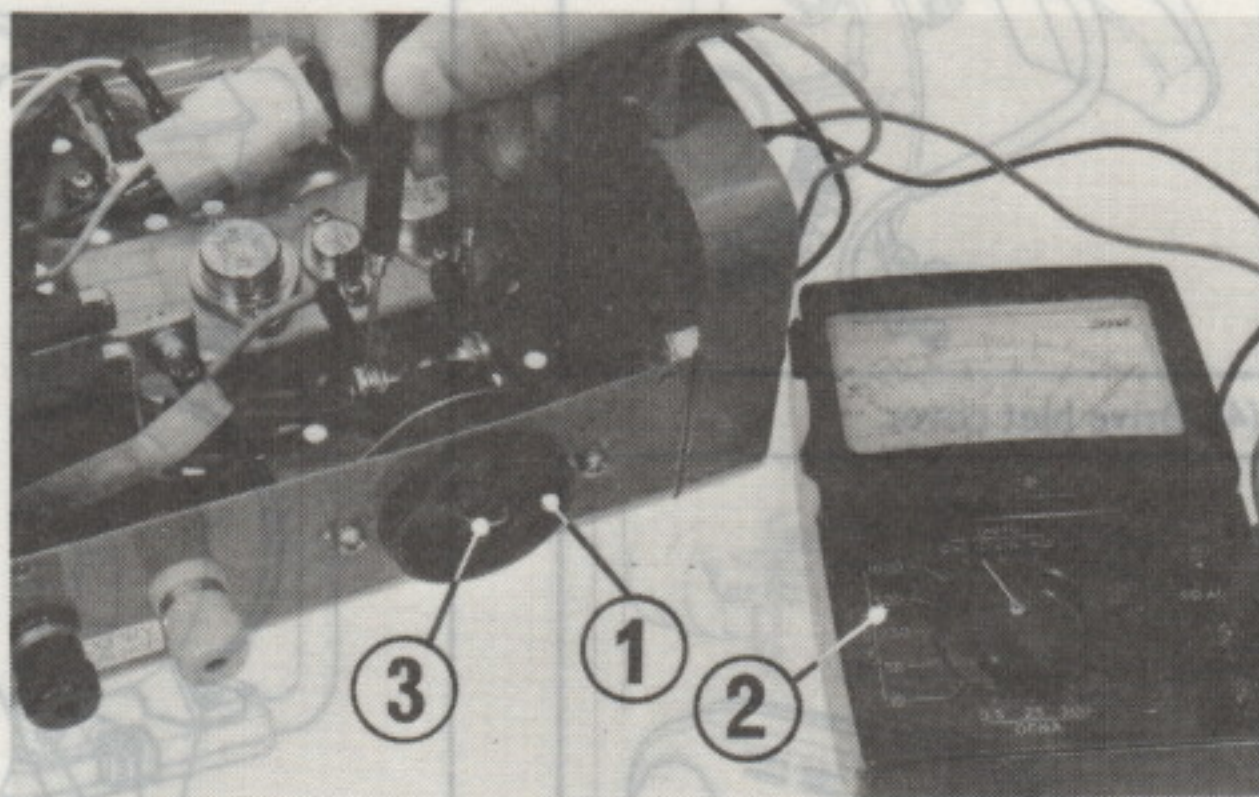


Fig. 9-3 (1) Receptacle  
(2) Tester  
(3) Piece of wire

### Replacement of Receptacle:

To replace the receptacle, remove the two 4mm screws and disconnect each wire lead at the terminal.

10mm bolts - 400 - 200 kg-cm  
(29.0 - 36.3 lbs-ft)  
8mm bolts - 200 - 280 kg-cm  
(14.2 - 20.1 lbs-ft)

NOTE: To install, reverse the removal procedure.

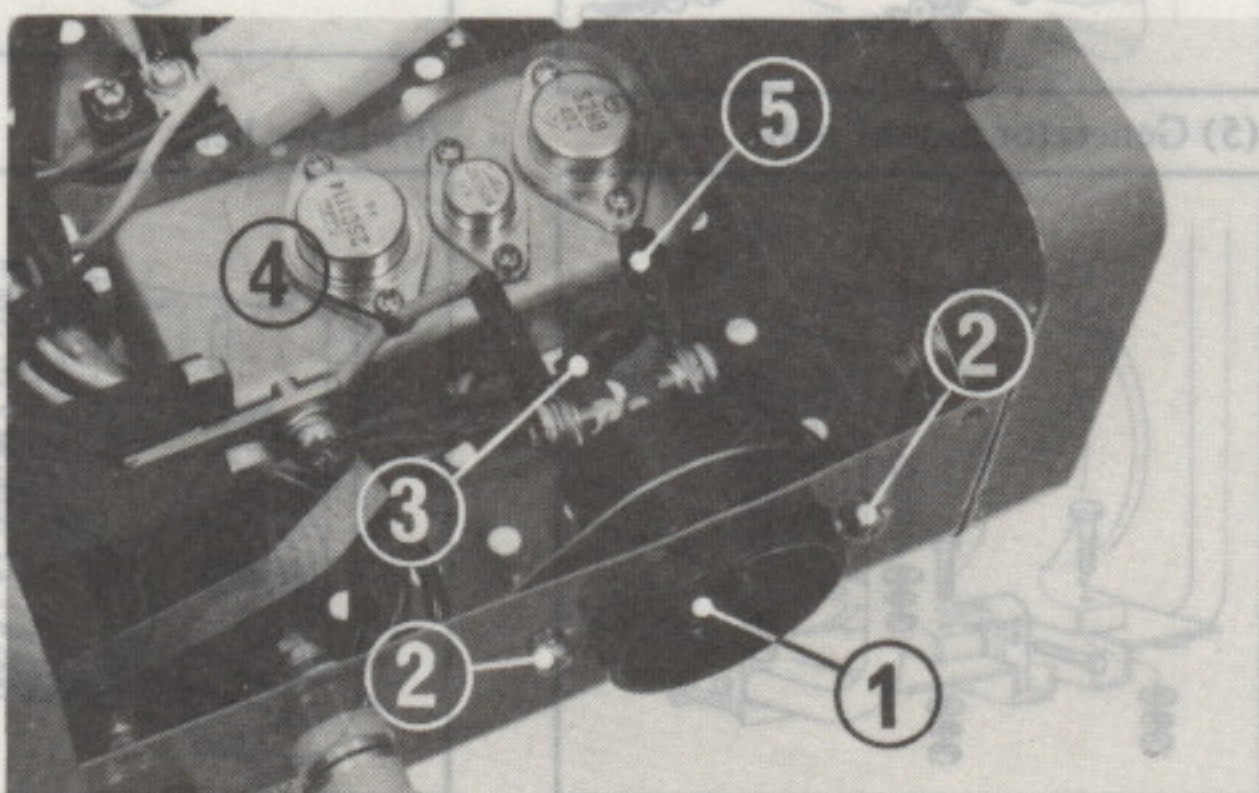


Fig. 9-4 (1) Receptacle  
(2) 4mm screw  
(3) Black  
(4) Red  
(5) Blue



## 9-4 INSPECTION OF CIRCUIT BREAKER

1. Remove the control box. (See page 15)
2. Turn off the six 4 mm screws and take out the cover from the control box.
3. With the breaker knob in ON, check for continuity between the terminal of the breaker and red lead terminal of the output receptacle. Replace the breaker or wire lead if there is no continuity.

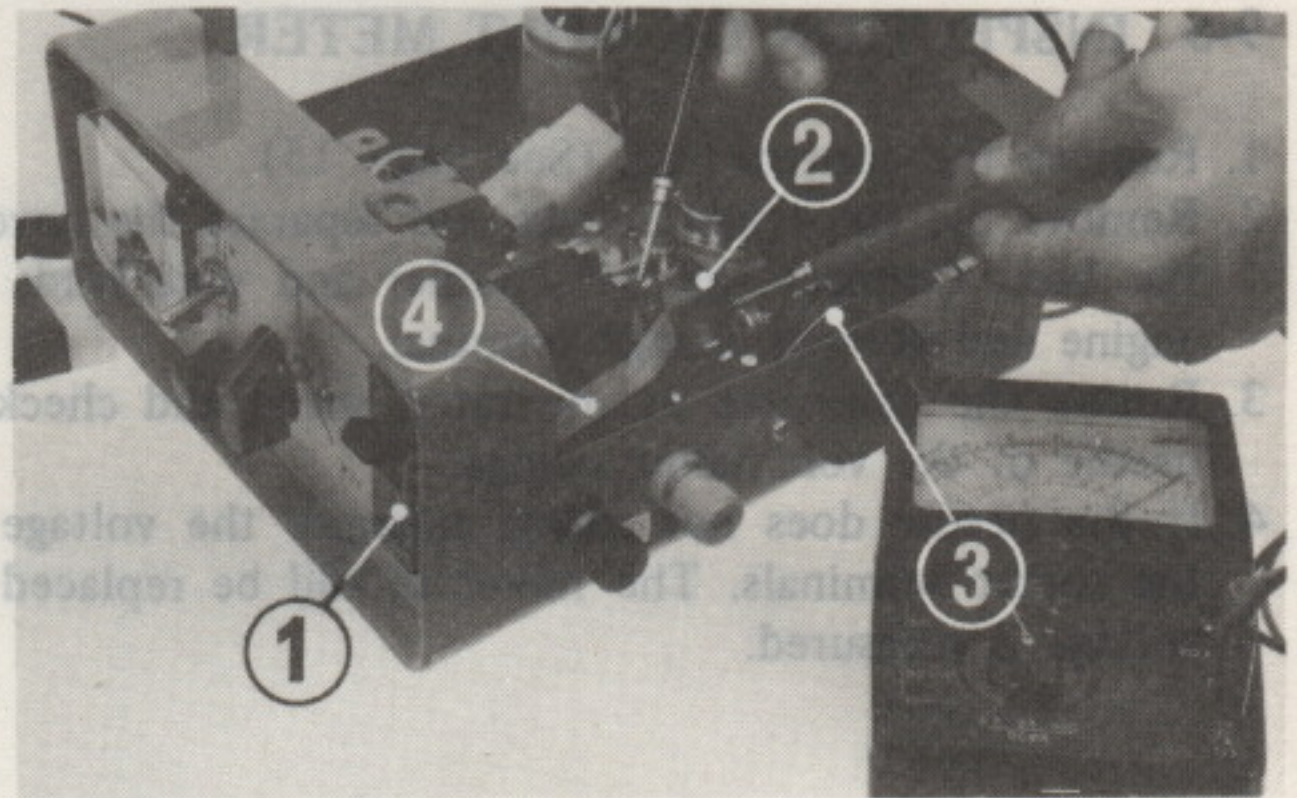


Fig. 9-5 (1) Circuit breaker (2) Red wire lead (3) Receptacle (4) Tape

### Replacement of Circuit Breaker:

Remove the two 5 mm screws and disconnect the wire leads. The breaker can then be taken out. After installing a new breaker, hold the red wire lead with tape as shown in Fig. 9-5.

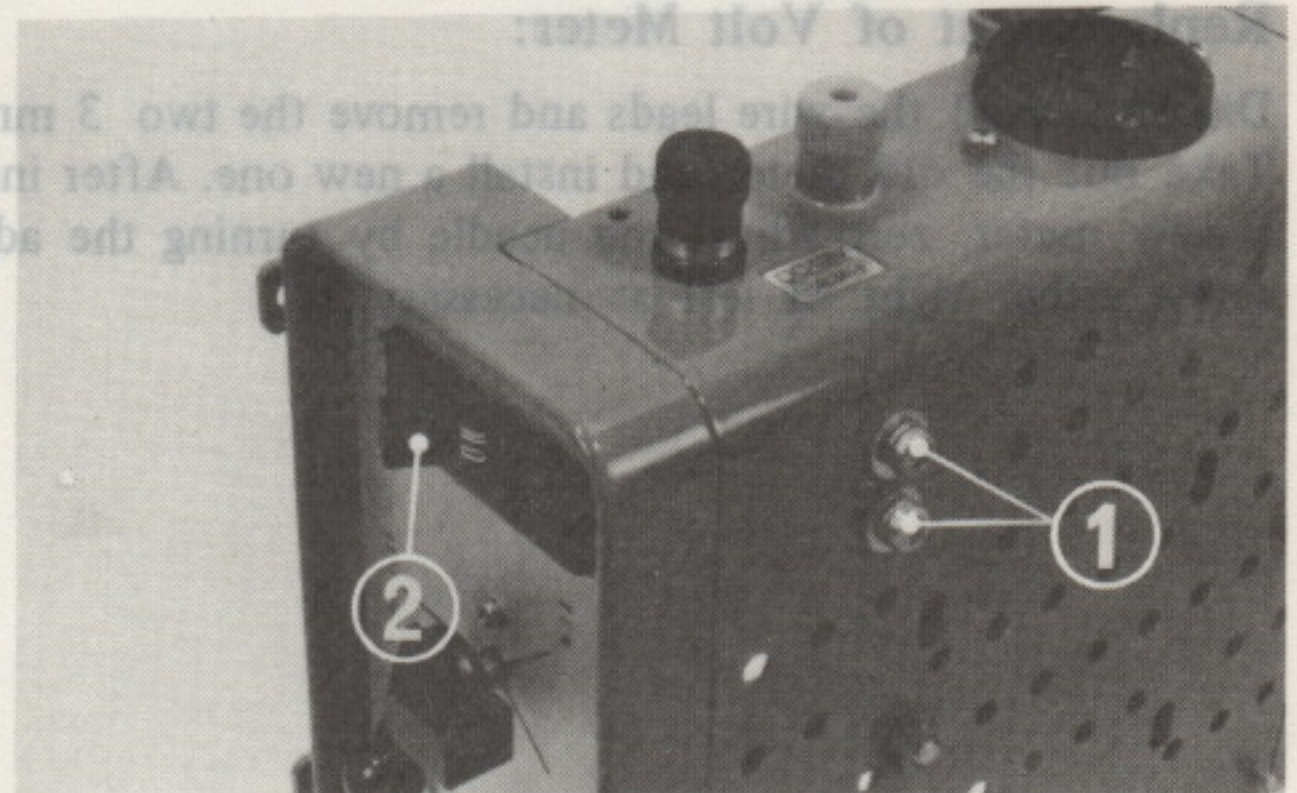


Fig. 9-6 (1) 5 mm screw (2) Circuit breaker

## 9-5 INSPECTION OF VOLTAGE ADJUSTING KNOB (VR)

1. Remove the control box. (See page 15)
2. Loosen off the six 4 mm screws and remove the cover from the control box.
3. Disconnect the 4-P coupler. Check for continuity between the light green wire leads of the 4-P and 8-P couplers. If there is no continuity, it is a sure sign that the wire leads or couplers are poorly connected or broken. Replace defective parts with new ones.

Resistance:  $225 - 275\Omega$  (with VR knob in MAXIMUM)

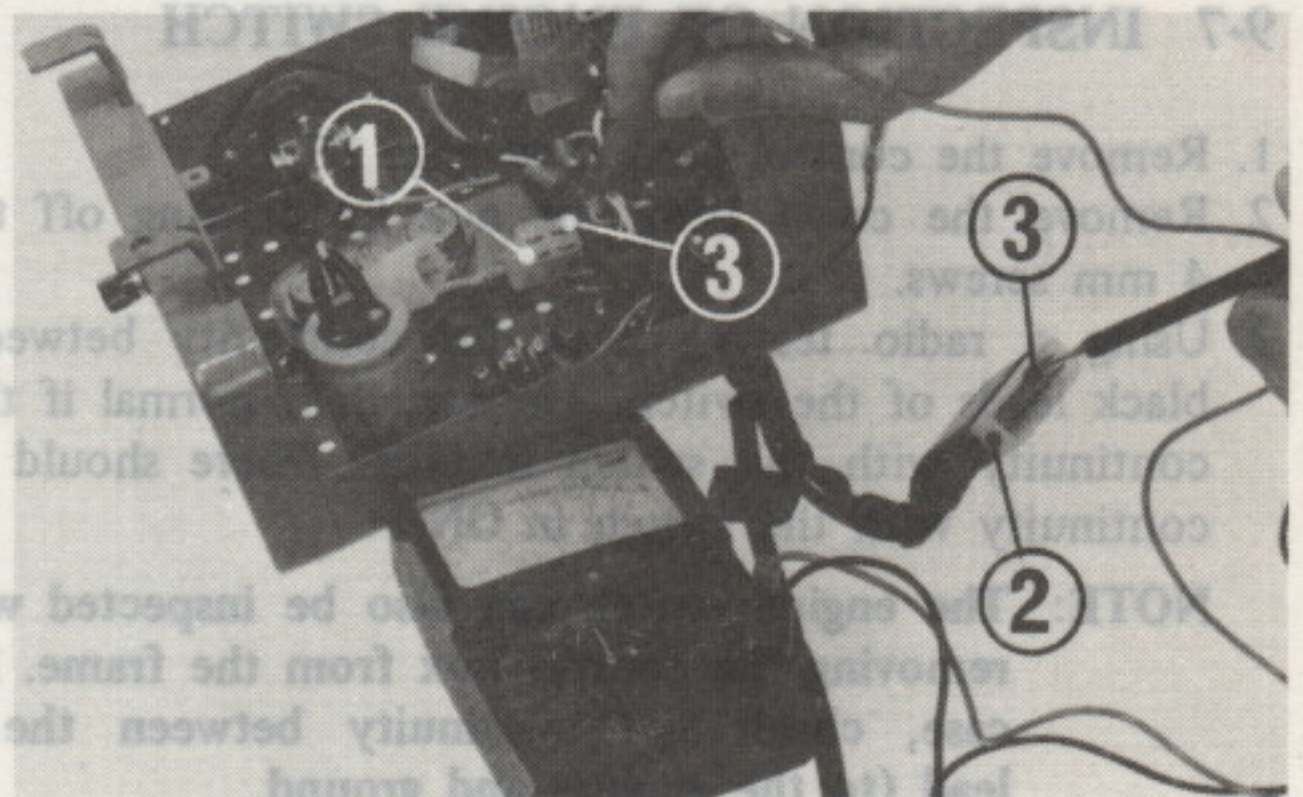


Fig. 9-7 (1) 4-P coupler (2) 8-P coupler (3) Light green wire lead

### Replacement of VR:

- a. Remove the knob by backing off the set screw.
- b. Remove the two 3 mm screws and disconnect the light green leads at the connectors. The voltage adjusting unit (VR) can then be replaced with a new one.

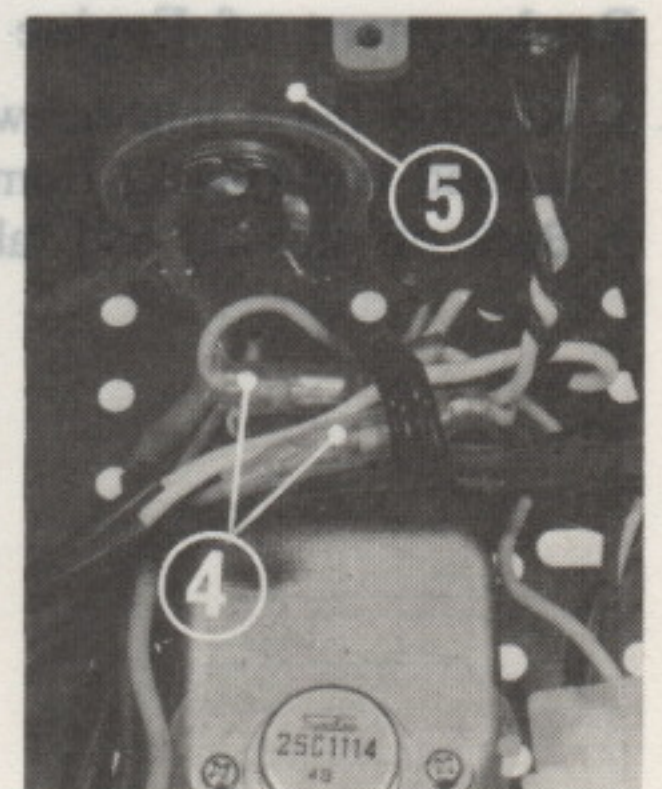
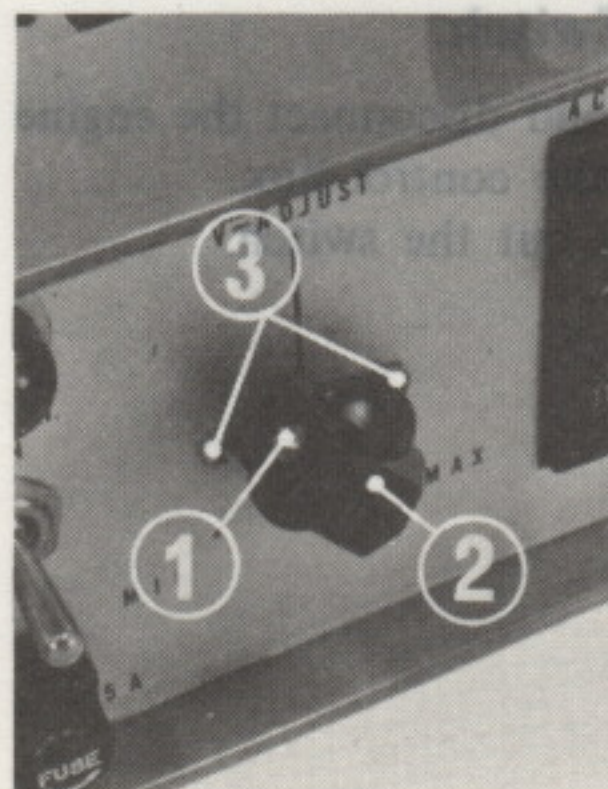


Fig. 9-8 (1) Set screw (2) Knob (3) 3 mm screw (4) Light green lead (5) VR



## 9-6 INSPECTION OF VOLT METER

1. Remove the control box. (See Page. 15)
2. Remove the six 4 mm screws and separate the cover from the box. Connect the 8-P coupler and wire leads to the engine and voltage change terminal.
3. Rotate the generator at the rated speed and check if the needle of the volt meter swings.
4. If the needle does not swing, measure the voltage across the meter terminals. The meter should be replaced if any voltage is measured.

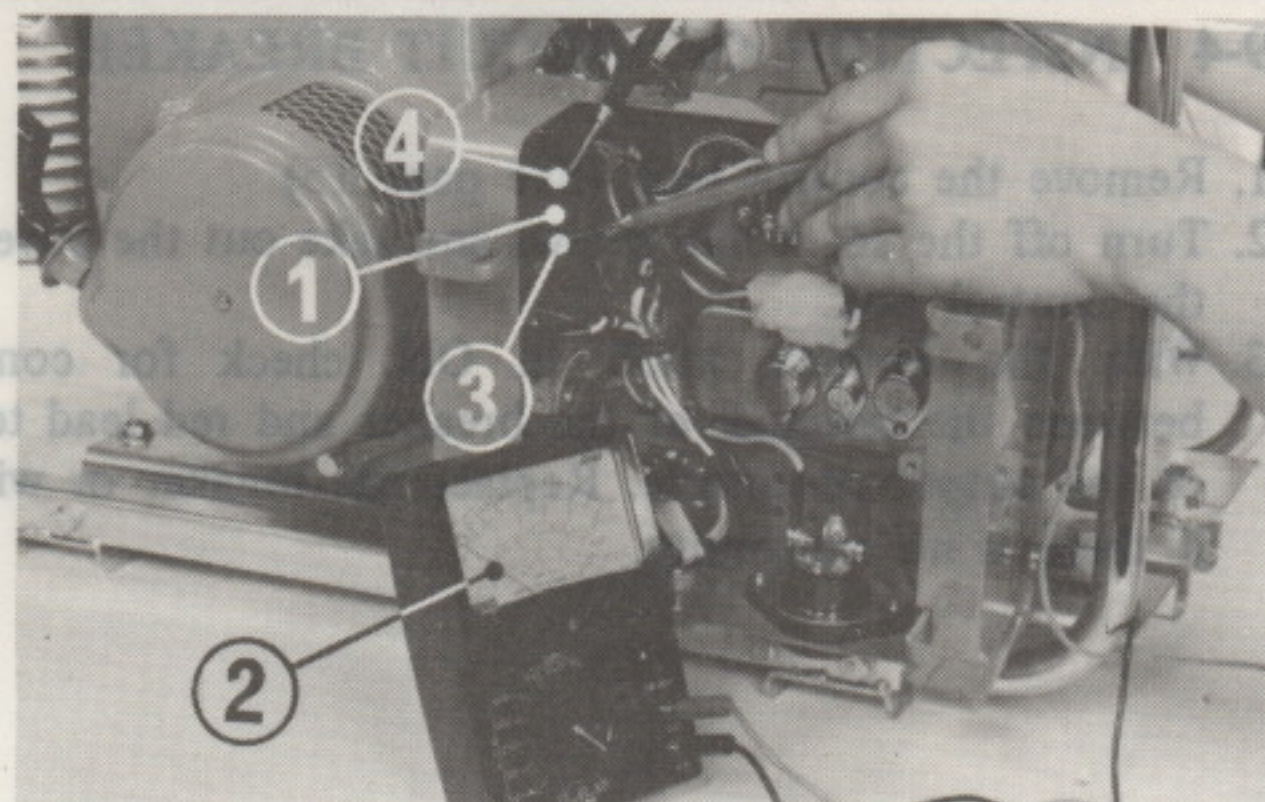


Fig. 9-9 (1) Volt meter (2) Tester (3) Positive (+) terminal (4) Negative (-) terminal

### Replacement of Volt Meter:

Disconnect all the wire leads and remove the two 3 mm nuts. Take out the old meter and install a new one. After installing a new meter, zero-adjust the needle by turning the adjusting screw either right or left as necessary.

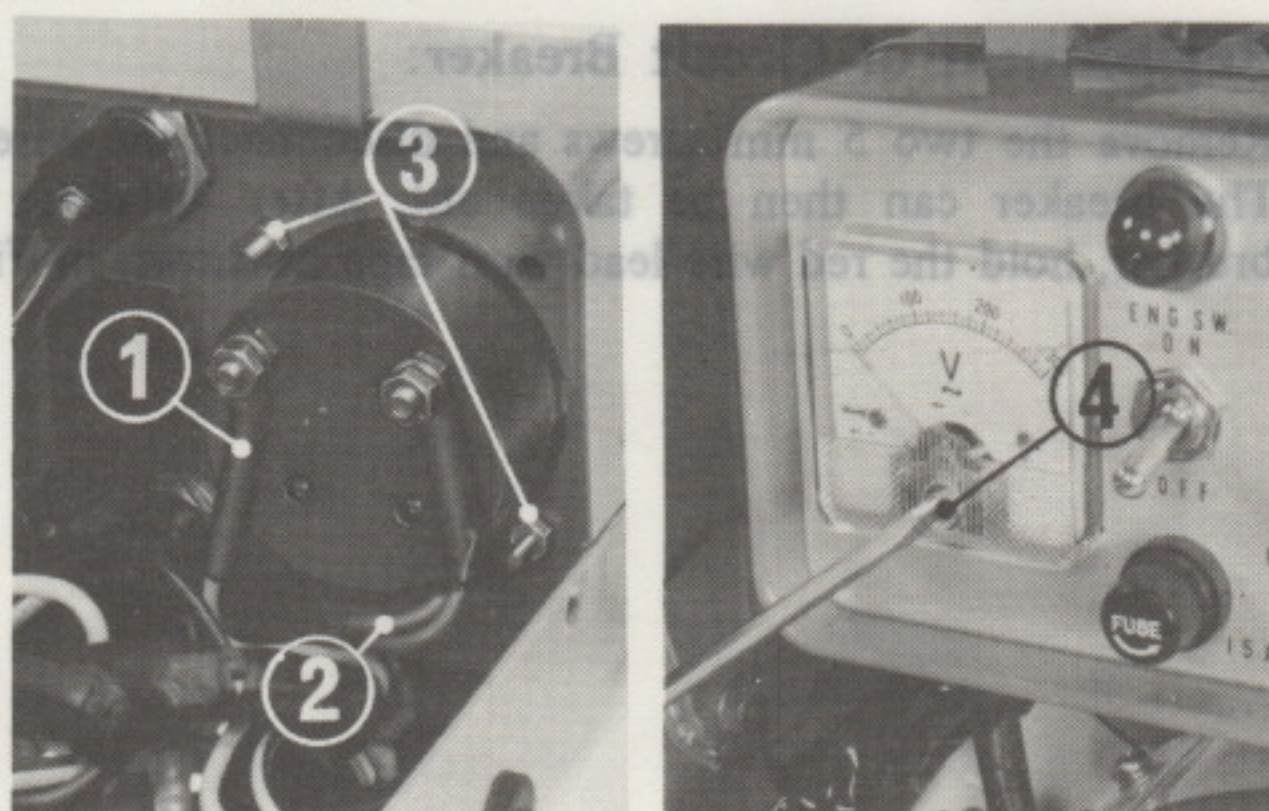


Fig. 9-10 (1) Red wire lead (2) Blue wire lead (3) 3 mm nut (4) Zero-adjustment screw

## 9-7 INSPECTION OF ENGINE SWITCH

1. Remove the control box. (See page 15)
2. Remove the cover from the box by backing off the six 4 mm screws.
3. Using a radio tester, check for continuity between the black leads of the switch. The switch is normal if there is continuity with the switch in OFF. There should be no continuity with the switch in ON.

**NOTE:** The engine switch can also be inspected without removing the control box from the frame. In this case, check the continuity between the black lead (to the engine) and ground.

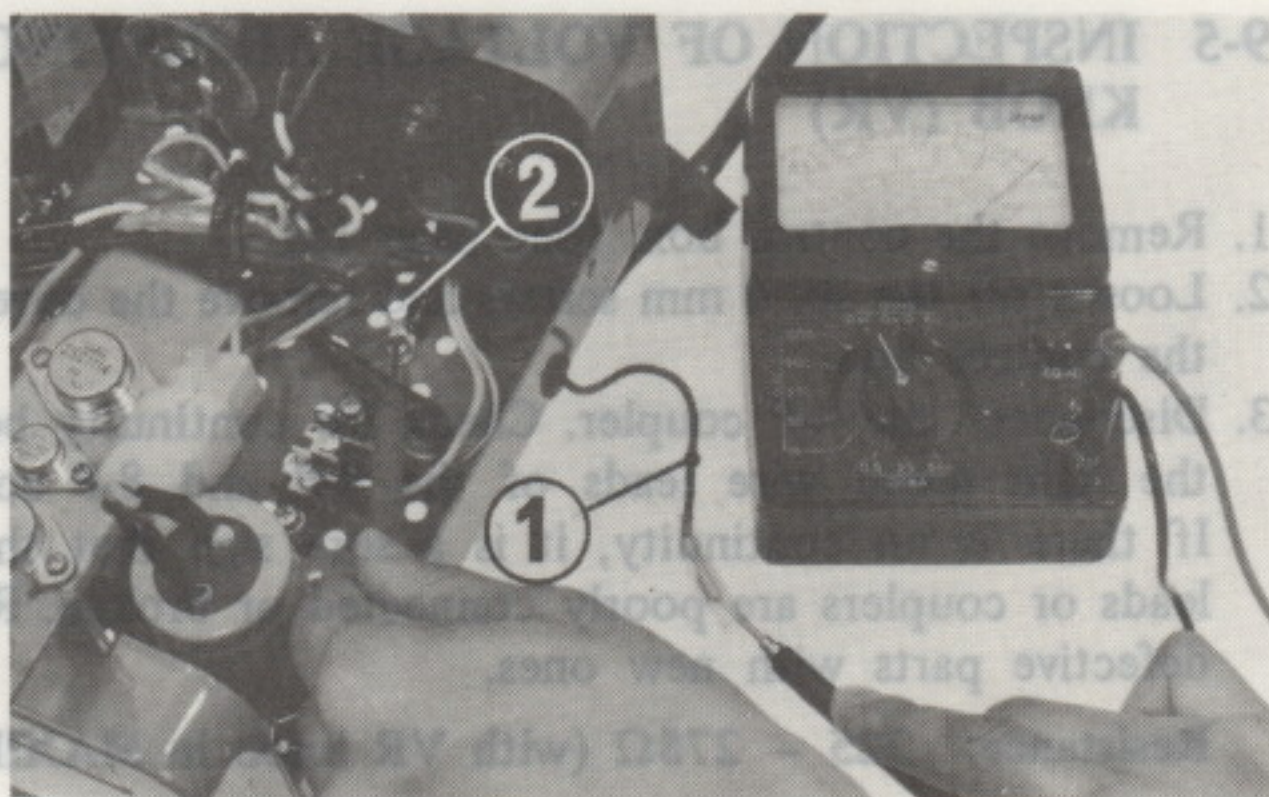


Fig. 9-11 (1) Black lead (2) Black lead (ground)

### Replacement of Engine Switch:

- a. Remove the 4 mm screw and disconnect the engine switch ground lead (black) from the control box.
- b. Back off the nut and take out the switch.

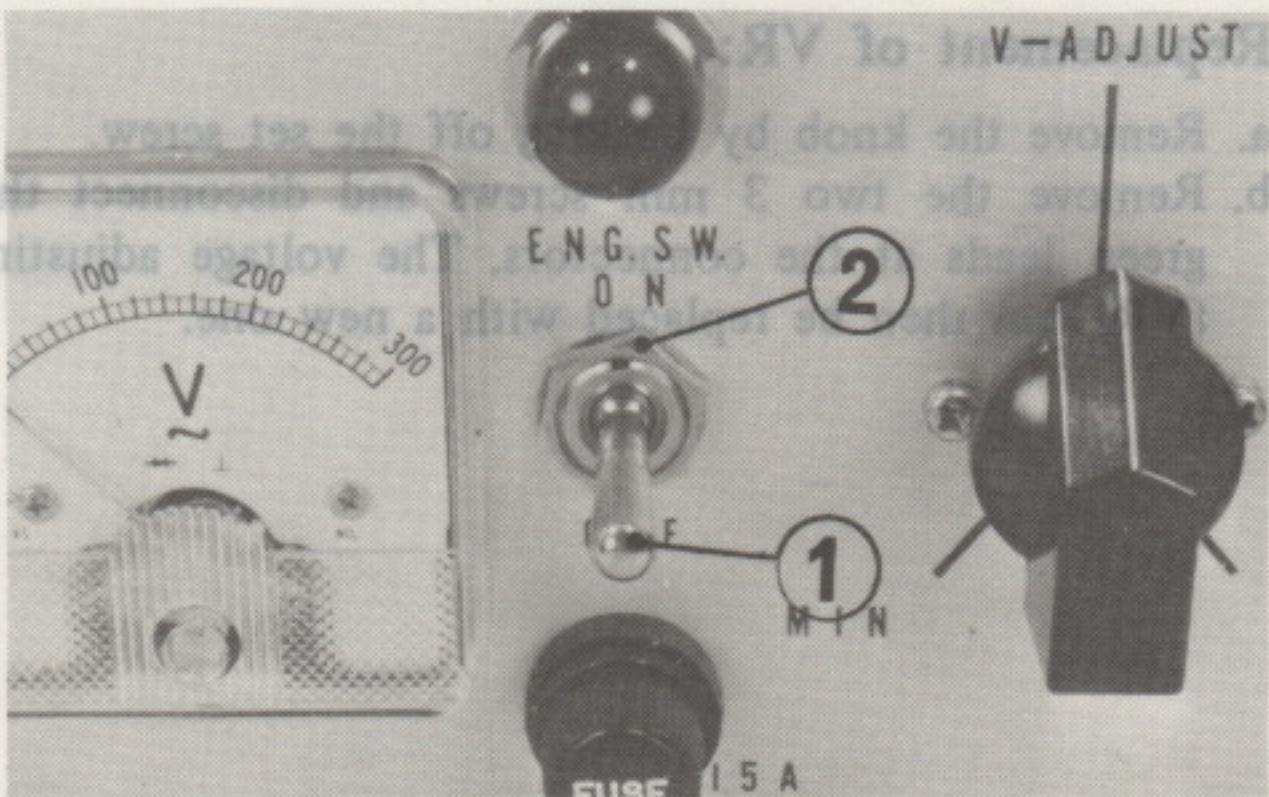


Fig. 9-12 (1) Engine switch (2) Nut



## 9-8 INSPECTION OF AVR

1. Remove the control box. (See page 15)
2. Remove the six 4 mm screws and take out the control box cover.
3. Disconnect wire leads and measure the resistance with a radio tester in 100 $\Omega$  range. If the readings do not agree with the instructions given in Table below, replace the AVR with a new one.

### Replacement of AVR:

Remove the two 5 mm and two 4 mm screws and take it out complete with the condenser.

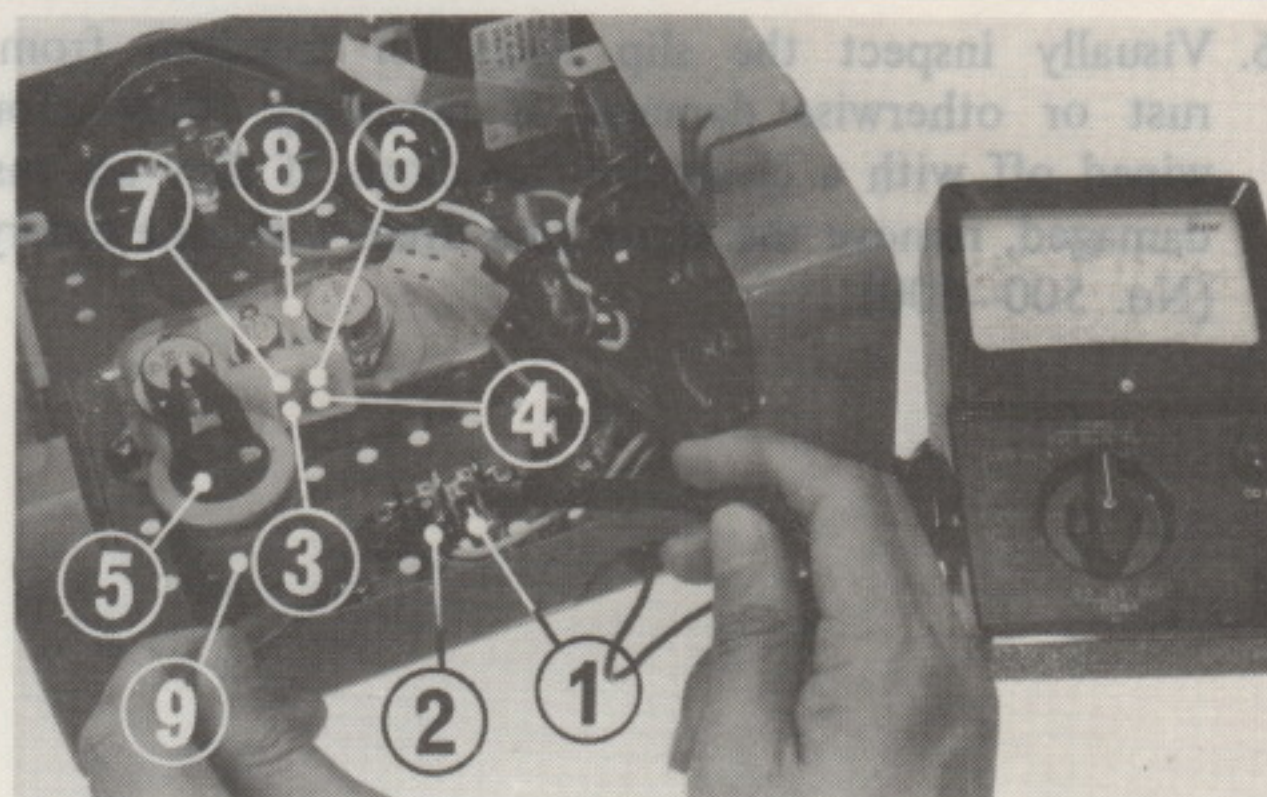


Fig. 9-13 (1) Light green/black (6) Blue  
(2) Light green/white (7) Light green  
(3) Green (8) AVR  
(4) Light green/red (9) Condenser  
(5) Black

Polarity of test probe	(+)	Light green/black	Light green/white	Green	Light green/white	Light green/red	Light green/white
	(-)	Light green/white	Light green/black	Light green/white	Green	Light green/white	Light green/red
Swing of test		Little	Large	Little	Large	Little	Large

Polarity of test probe	(+)	Black	Blue	Black	Light green	Black	Green	Black	Light green/red
	(-)	Blue	Black	Light green	Black	Green	Black	Light green/red	Black
Swing of test needle		Little	Large	Little	Large	Little	Large	Little	Large

**NOTE:** If the above test reveals that the AVR is in good order, there is still another possibility of damaged internal parts. If this is the case, replace the old AVR with a new one since the parts are molded and cannot be inspected.

## 9-9 INSPECTION OF CARBON BRUSH AND SLIP RING

1. Remove the two 4 mm screws securing the end cover in place; take out the cover.
2. Unscrew the two 4 mm screws and take out the brush holder.
3. Disconnect the wire leads from the brush holder.

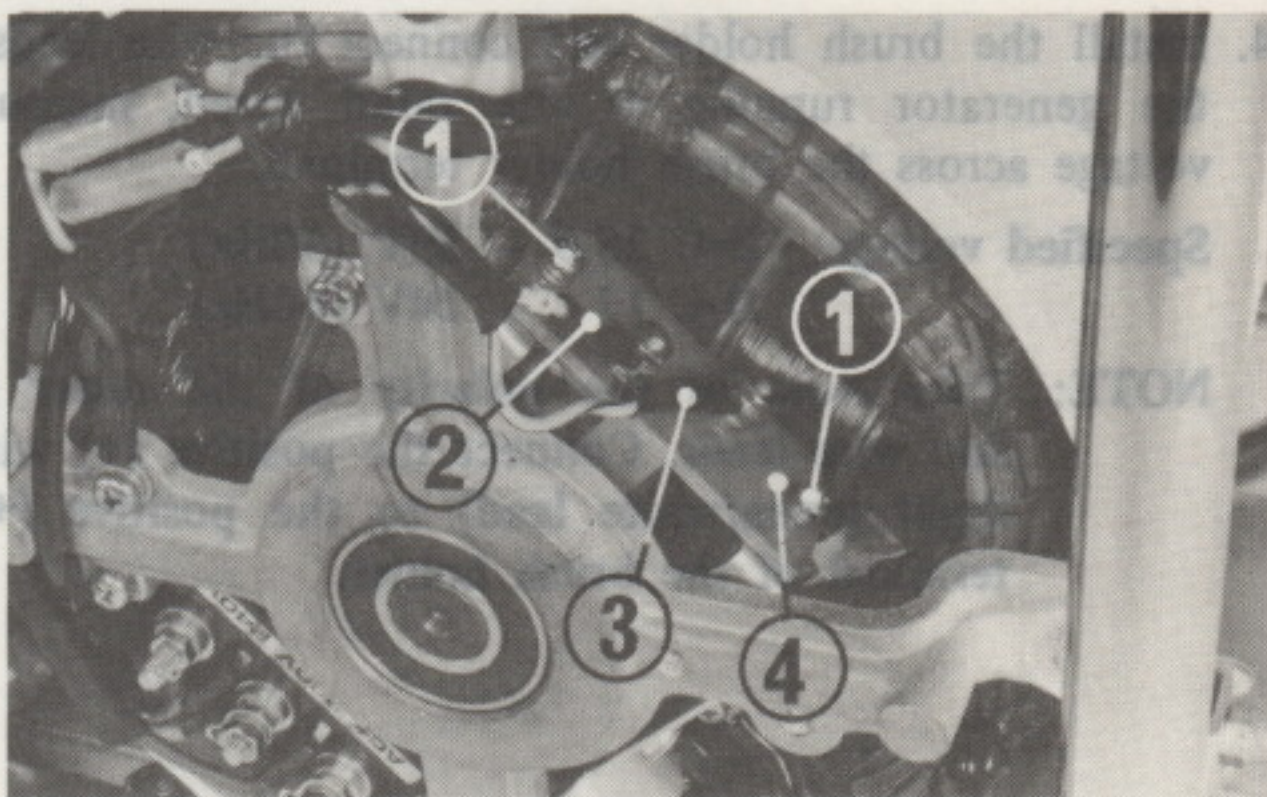


Fig. 9-14 (1) 4 mm screw  
(2) Light green/white (+)  
(3) Light green/black  
(4) Brush holder

4. Disassemble the brush holder. Brushes that are worn down to 15 mm (0.6 in.) should be replaced.
5. Install the brushes into the holder and make sure the brushes move smoothly.

**NOTE:** Connect the lead with the mark (+) to the positive (+) side of the brush holder.

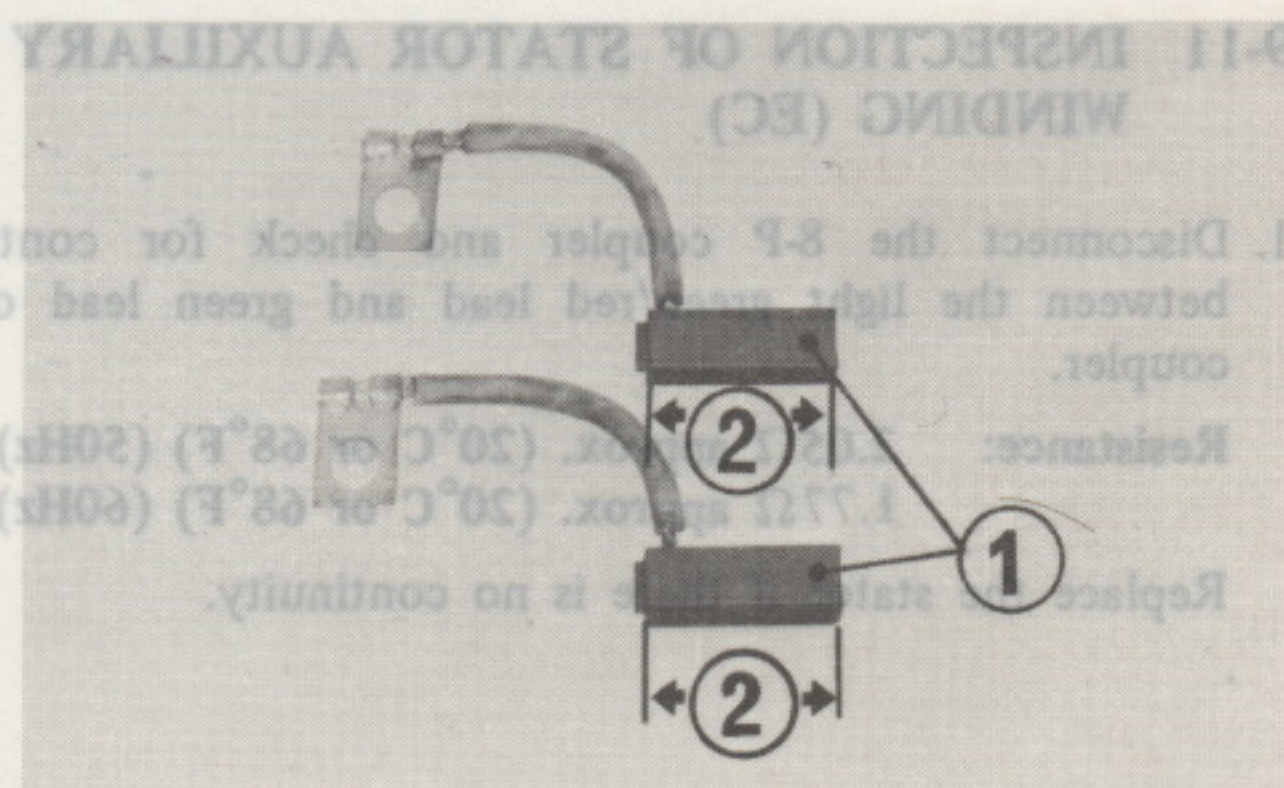


Fig. 9-15 (1) Carbon brush  
(2) Wear limit: 15 mm (0.6 in.)



6. Visually inspect the slip rings for freedom from dust, rust or otherwise damage. If necessary, they should be wiped off with a clean lint-free cloth. If they are rusted or damaged, remove the stator and dress with fine emery cloth (No. 500-600)

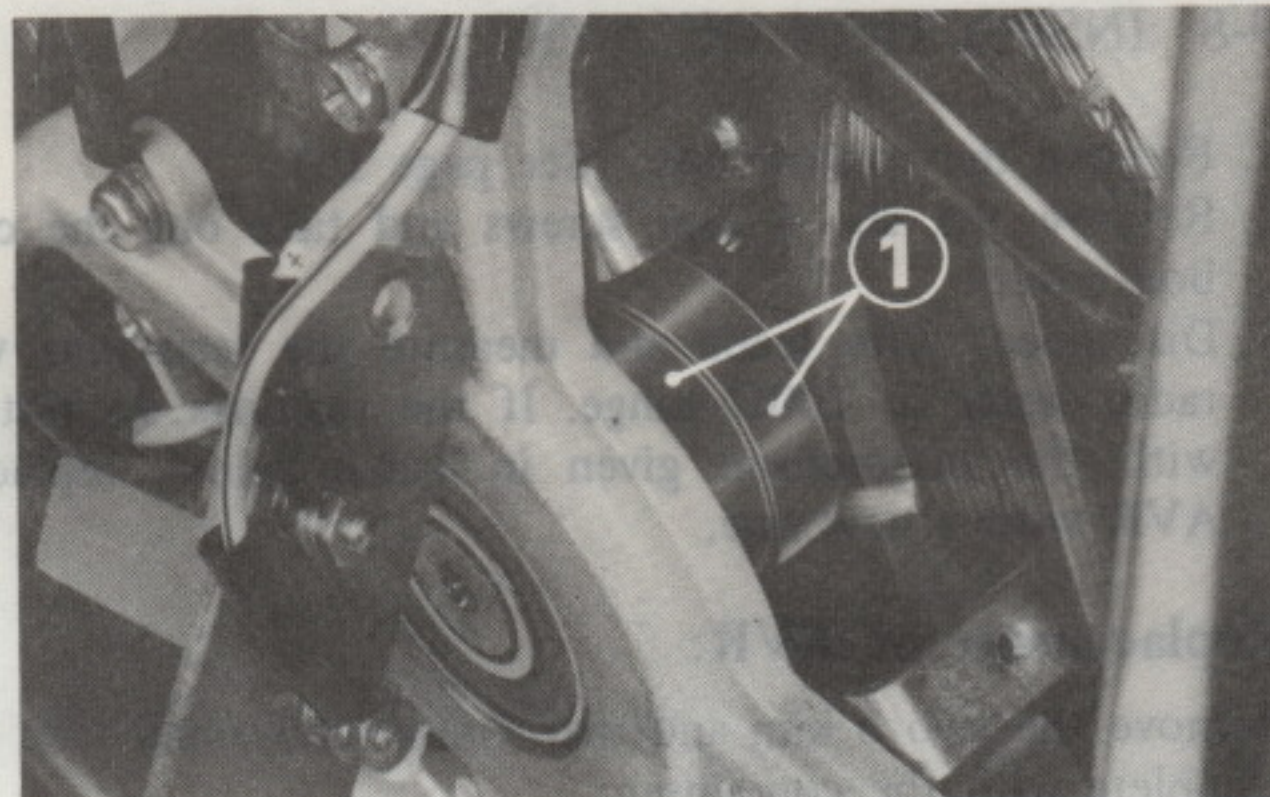


Fig. 9-16 (1) Slip ring

### 9-10 INSPECTION OF FIELD WINDING (FC)

1. Remove the two 5 mm screws and take out the end cover.
2. Disconnect each wire lead and remove the two 5 mm screws. Remove the brush holder.
3. Using a radio tester, measure the resistance between the slip rings.

**Specified resistance:**  $70\Omega$  approx. ( $20^{\circ}\text{C}$  or  $68^{\circ}\text{F}$ , cold)

$60\Omega$  approx. ( $-15^{\circ}\text{C}$  or  $5^{\circ}\text{F}$ )

$85\Omega$  approx. ( $40^{\circ}\text{C}$  or  $104^{\circ}\text{F}$ )

Replace the rotor if the resistance is zero (0) or there exists no continuity.

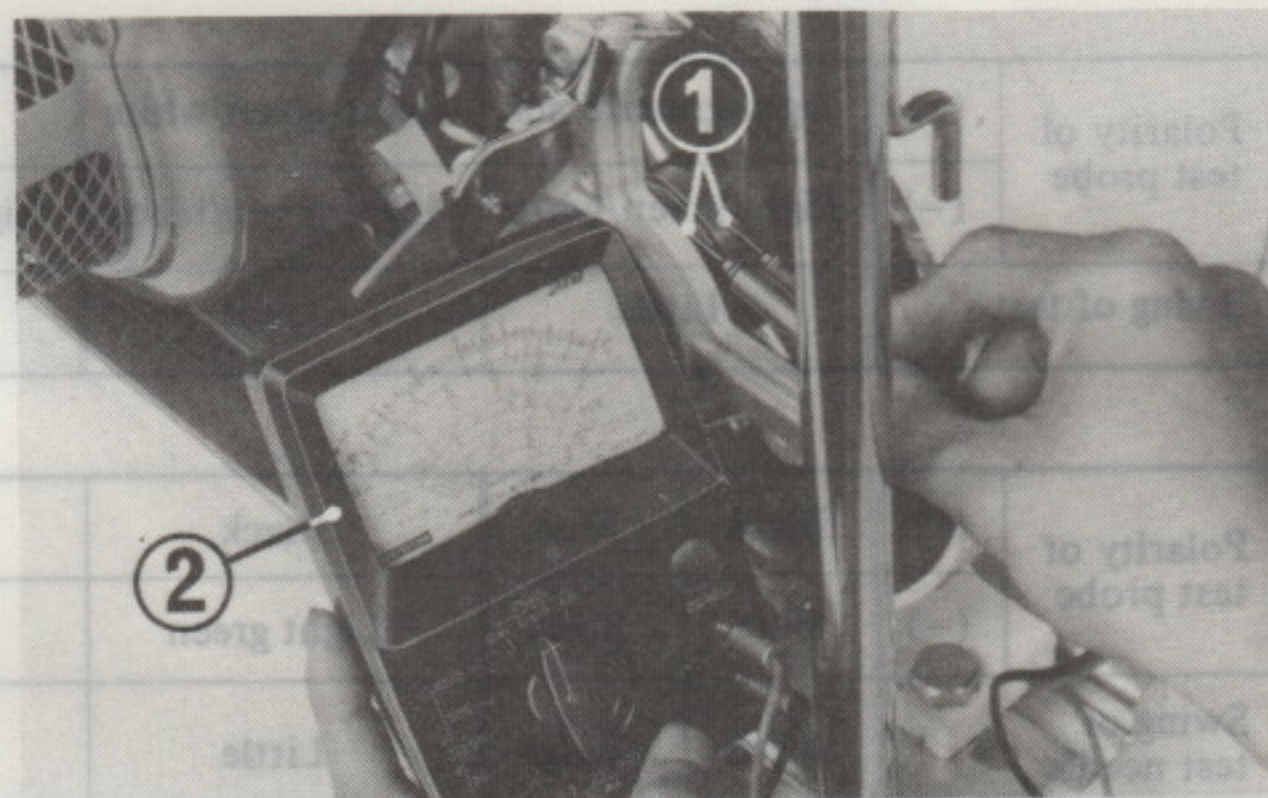


Fig. 9-17 (1) Slip ring (2) Tester

4. Install the brush holder and connect the wire leads. With the generator running at the rated speed, measure the voltage across the brush holder terminals.

**Specified voltage:** D-C 25.5 - 39V (50Hz)

D-C 17 - 24V (60Hz)

**NOTE:** Take note of the polarity of the tester probes and wire leads. Connect the positive (+) wire lead (light green/white lead) to the positive (+) side terminal of the brush holder.

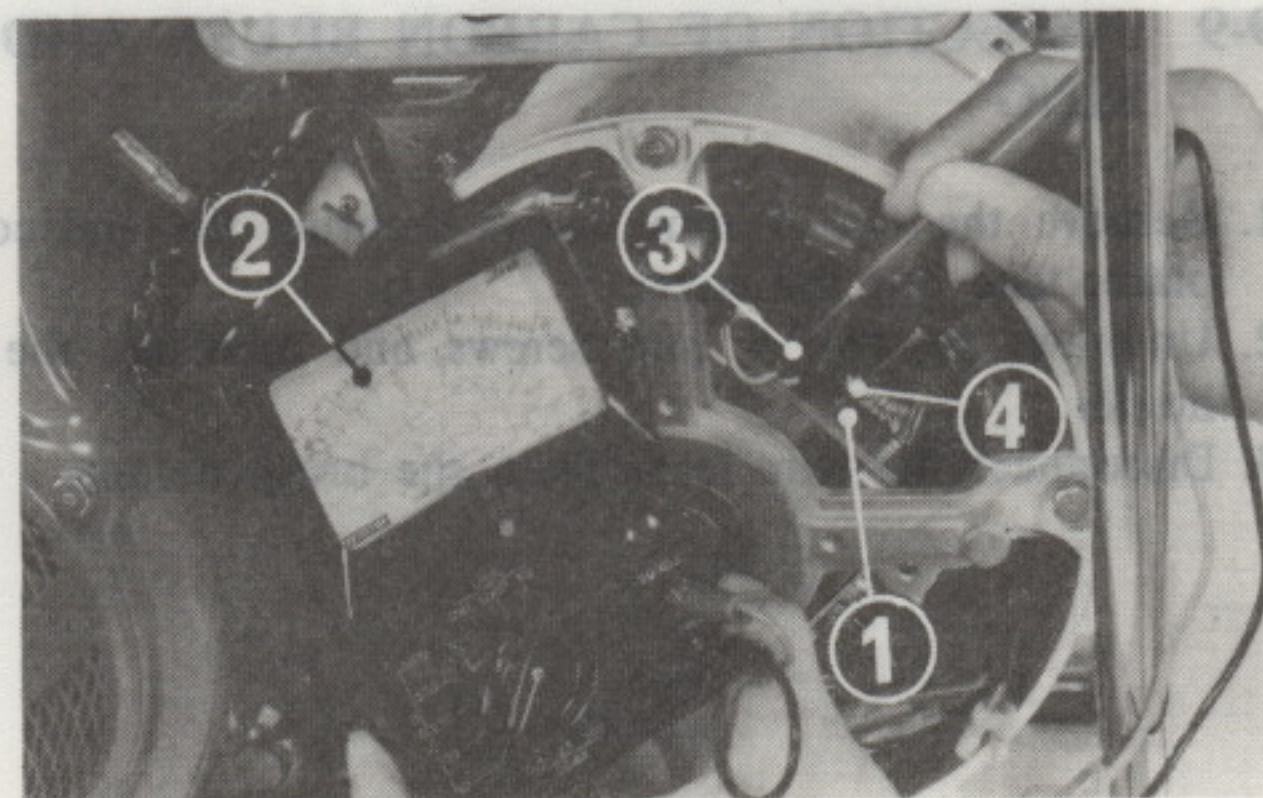


Fig. 9-18 (1) Brush holder  
(2) Tester  
(3) Positive (+) side terminal  
(4) Negative side terminal

### 9-11 INSPECTION OF STATOR AUXILIARY WINDING (EC)

1. Disconnect the 8-P coupler and check for continuity between the light green/red lead and green lead of the coupler.

**Resistance:**  $2.05\Omega$  approx. ( $20^{\circ}\text{C}$  or  $68^{\circ}\text{F}$ ) (50Hz)

$1.77\Omega$  approx. ( $20^{\circ}\text{C}$  or  $68^{\circ}\text{F}$ ) (60Hz)

Replace the stator if there is no continuity.

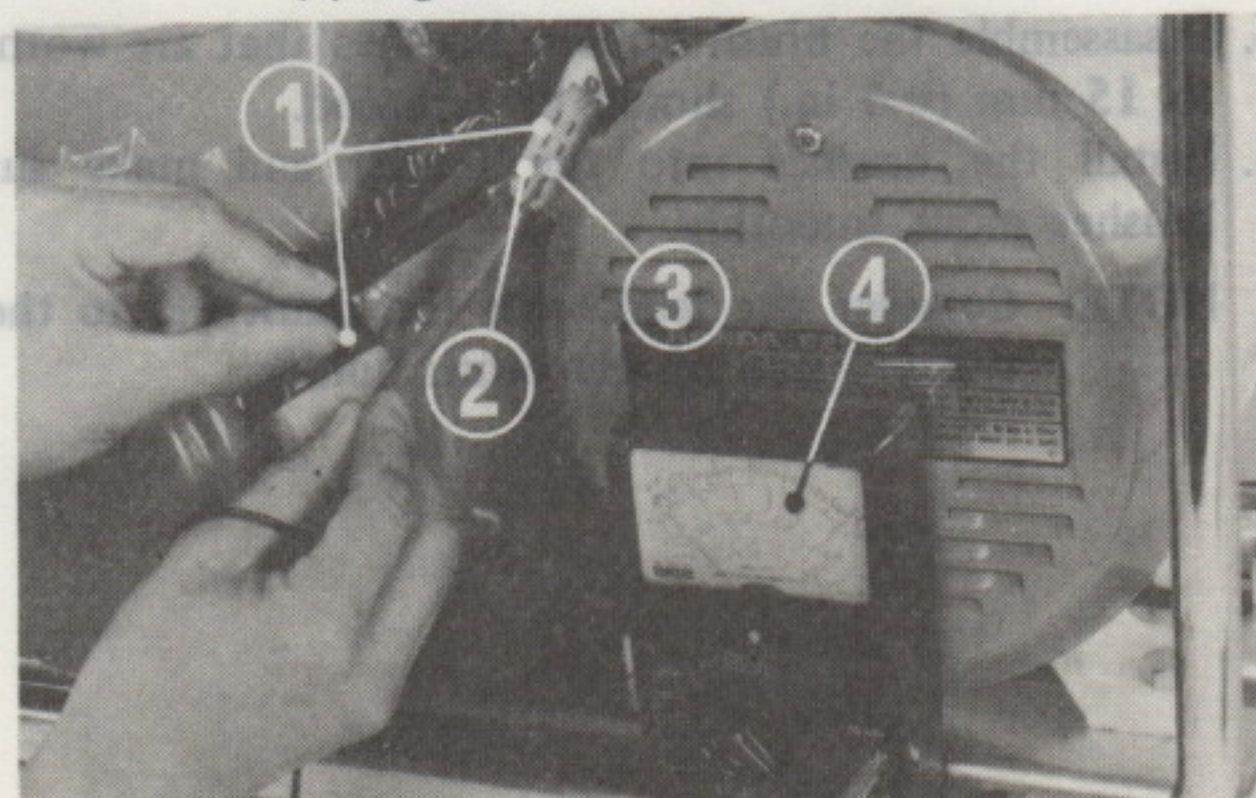


Fig. 9-19 (1) 8-P coupler  
(2) Light green/red lead  
(3) Green lead  
(4) Tester



2. With the generator running under no load at the rated speed, measure the voltage across the light green/red terminal and green lead terminal of the 8-P coupler.

**Specified voltage:** A-C 64 – 74V (50Hz)  
A-C 48 – 58V (60Hz)

Replace the stator with a new one if the voltage is below the specified limits.

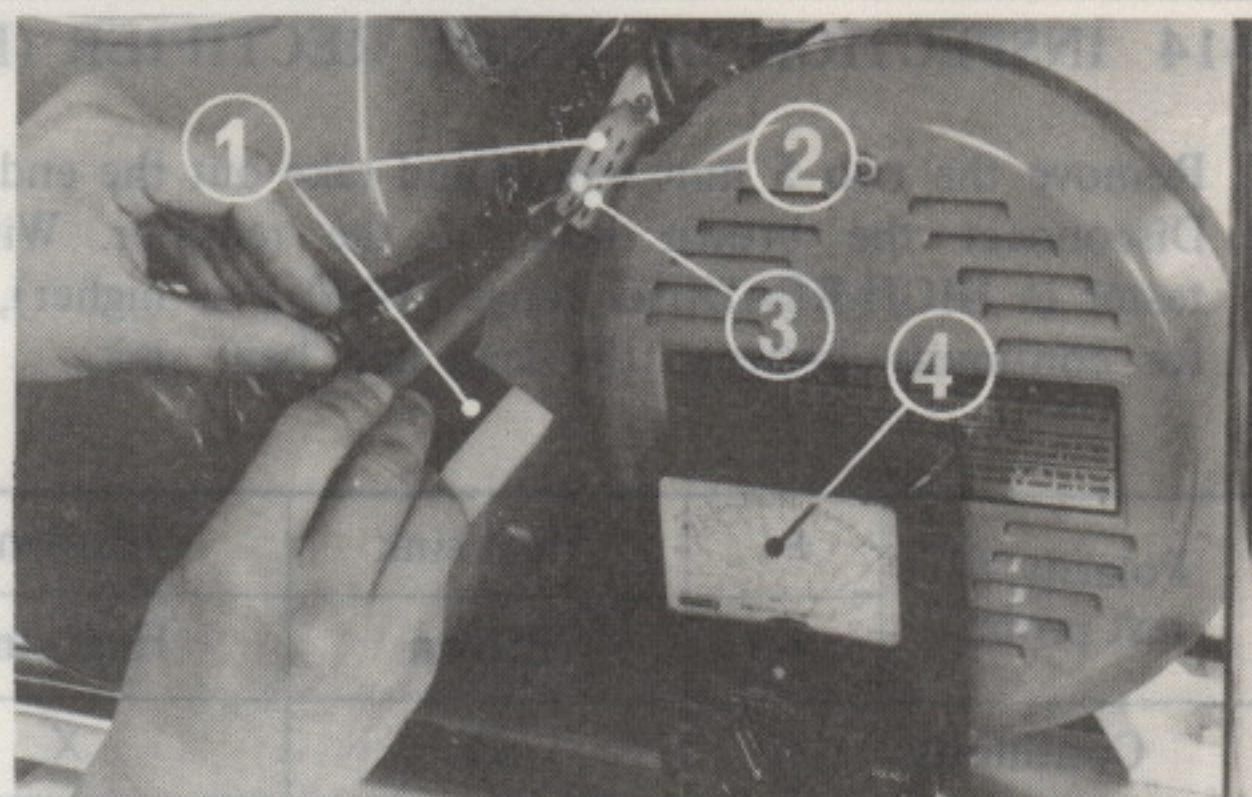


Fig. 9-20 (1) 8-P coupler (2) Light green/red lead (3) Green lead (4) Stator

## 9-12 INSPECTION OF STATOR A-C OUTPUT WINDING (MC)

1. Remove the 5 mm screws and take out the end cover.
2. Check for continuity between the A-C and 220V (Type T and A: 115V; Type U: 240V) terminals of the voltage conversion terminals.

Type	T and A	E, G and S	U
Resistance, approx.	0.55	1.92	2.95

\* at 20°C (68°F)

Replace the stator if there is no continuity. (See page 22)

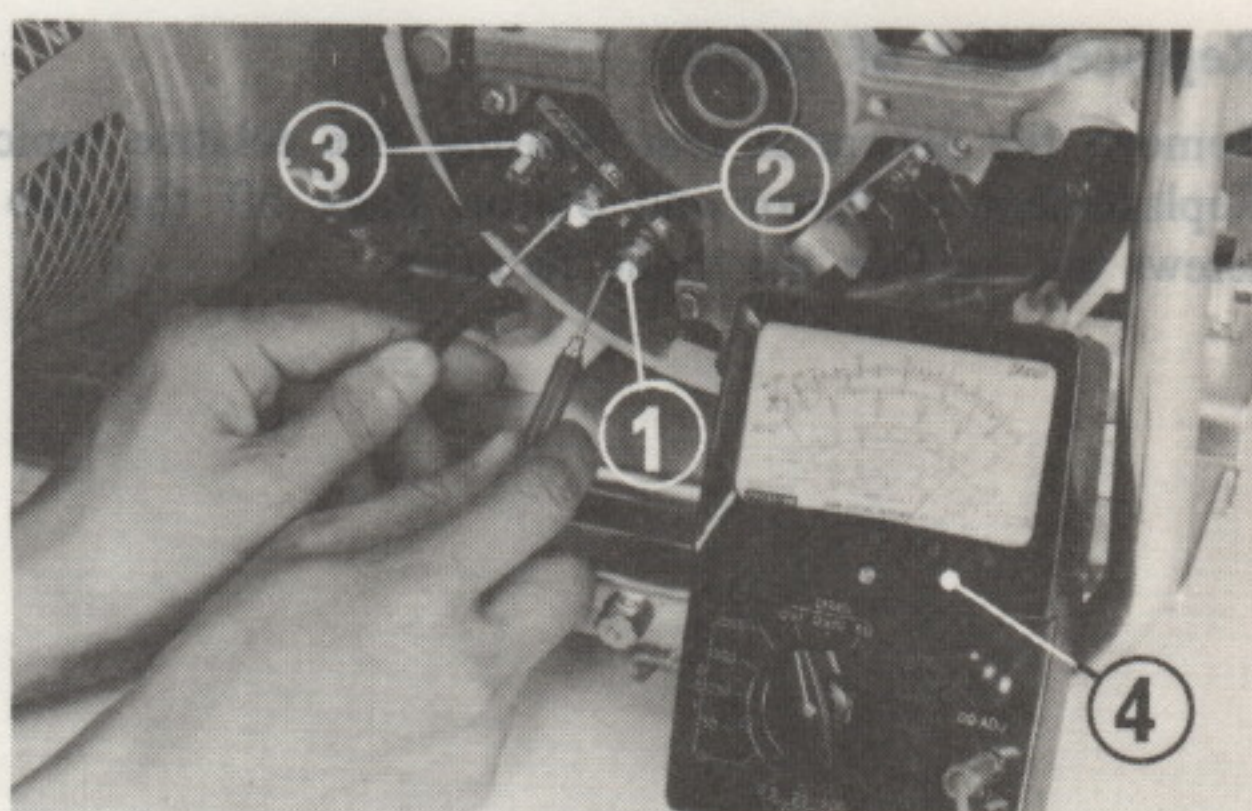


Fig. 9-21 (1) A-C terminal (2) 220V terminal (3) 240V terminal (4) Tester

3. Check terminal nuts for looseness.
4. Disconnect the 8-P coupler, check for continuity between 8-P coupler light green lead and A-C terminal. Replace the stator if there is no continuity.

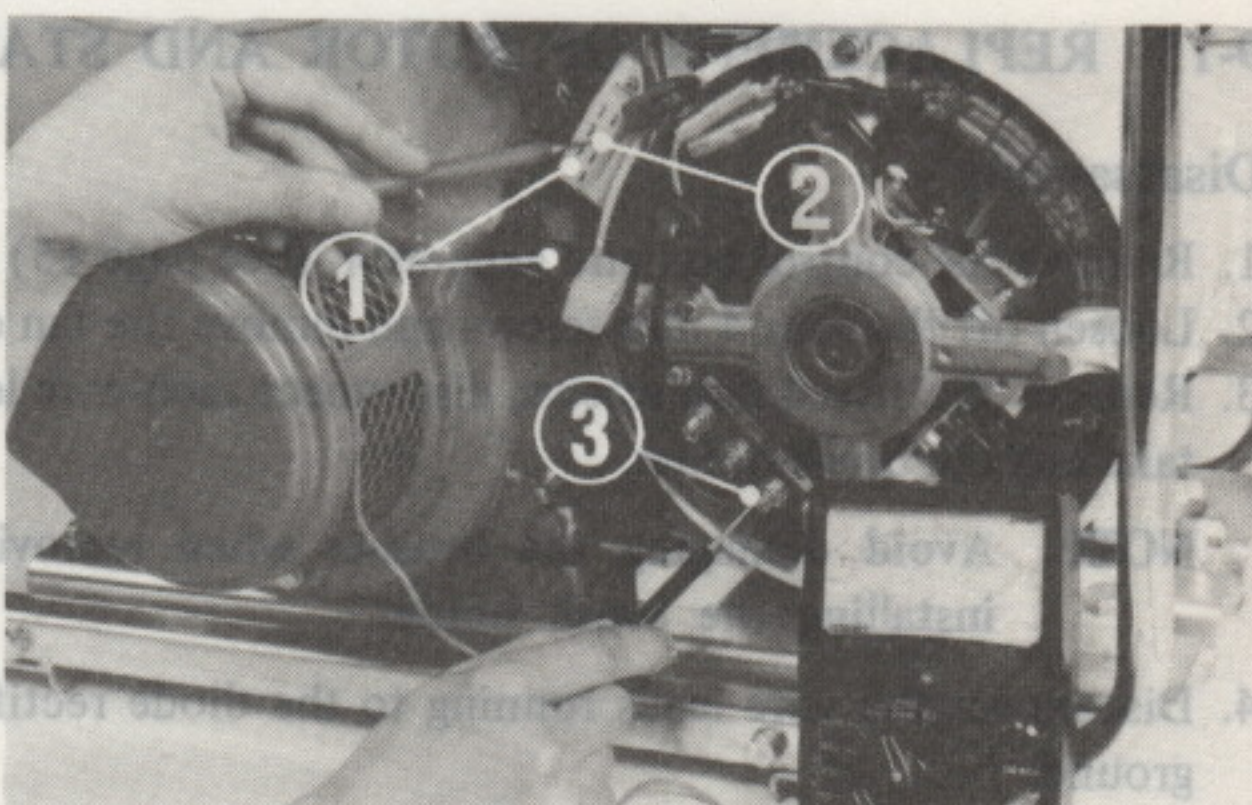


Fig. 9-22 (1) 8-P coupler (2) Light green lead (3) A-C terminal

## 9-13 INSPECTION OF STATOR D-C OUTPUT WINDING (DC · C)

1. Remove the two 5 mm screws and take out the end cover.
2. Disconnect the brown leads of the D-C output winding at the connector and check for continuity between them.

**Specified resistance:** Approx. 1.17Ω (at 20°C or 68°F)

Replace the stator if there is no continuity.

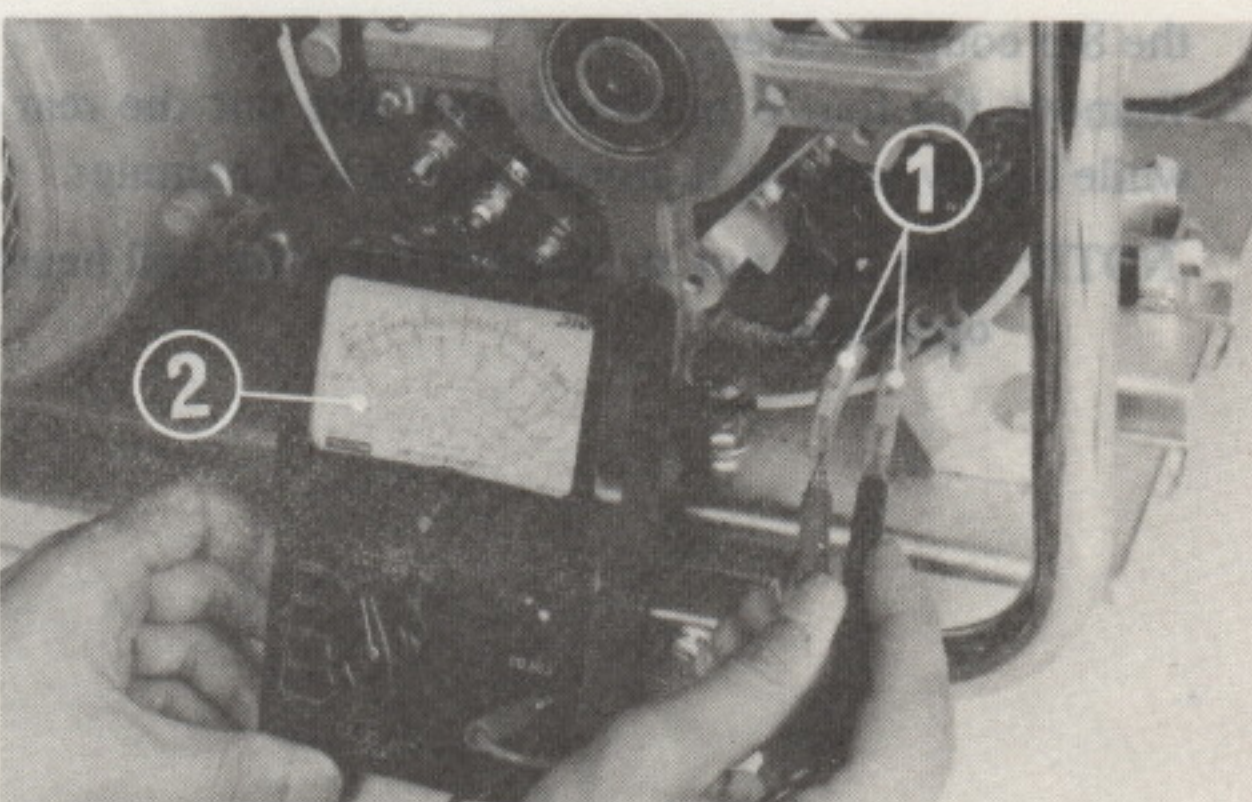


Fig. 9-23 (1) Brown lead (2) Tester



## 9-14 INSPECTION OF DIODE RECTIFIER (D1)

1. Remove the two 5 mm screws and take out the end cover.
2. Disconnect the brown lead of the rectifier. With the tester in HIGH-READING range ( $1000\Omega$  or higher), check for continuity between the lead and heat sink.

Polarity of test probe	+	Heat sink	Brown
	-	Brown	Heat sink
Continuity		○	X

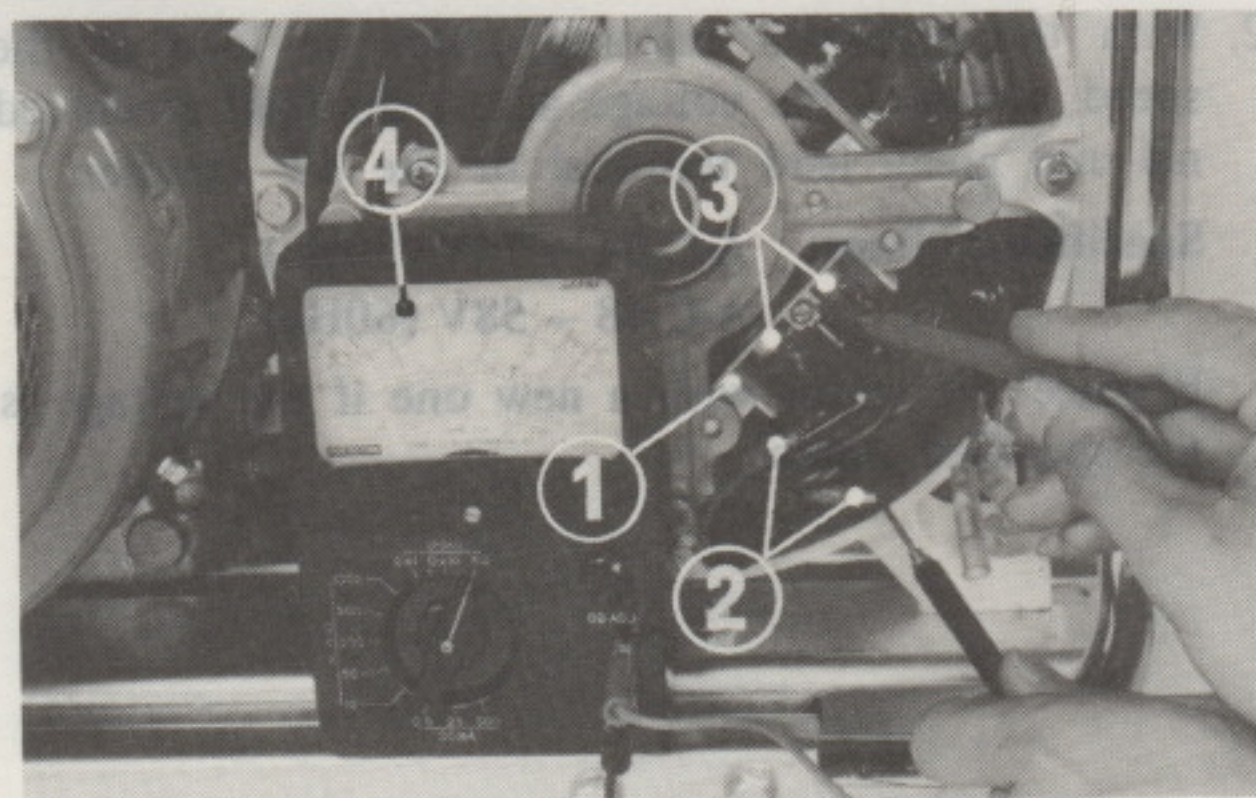


Fig. 9-24 (1) Heat sink (2) Brown lead (3) Diode rectifier (4) Tester

### Replacement of Diode:

Remove the generator rear housing. See relative topic under Replacement of Rotor and Stator. Back off the two 5 mm screws and replace the diode rectifier.

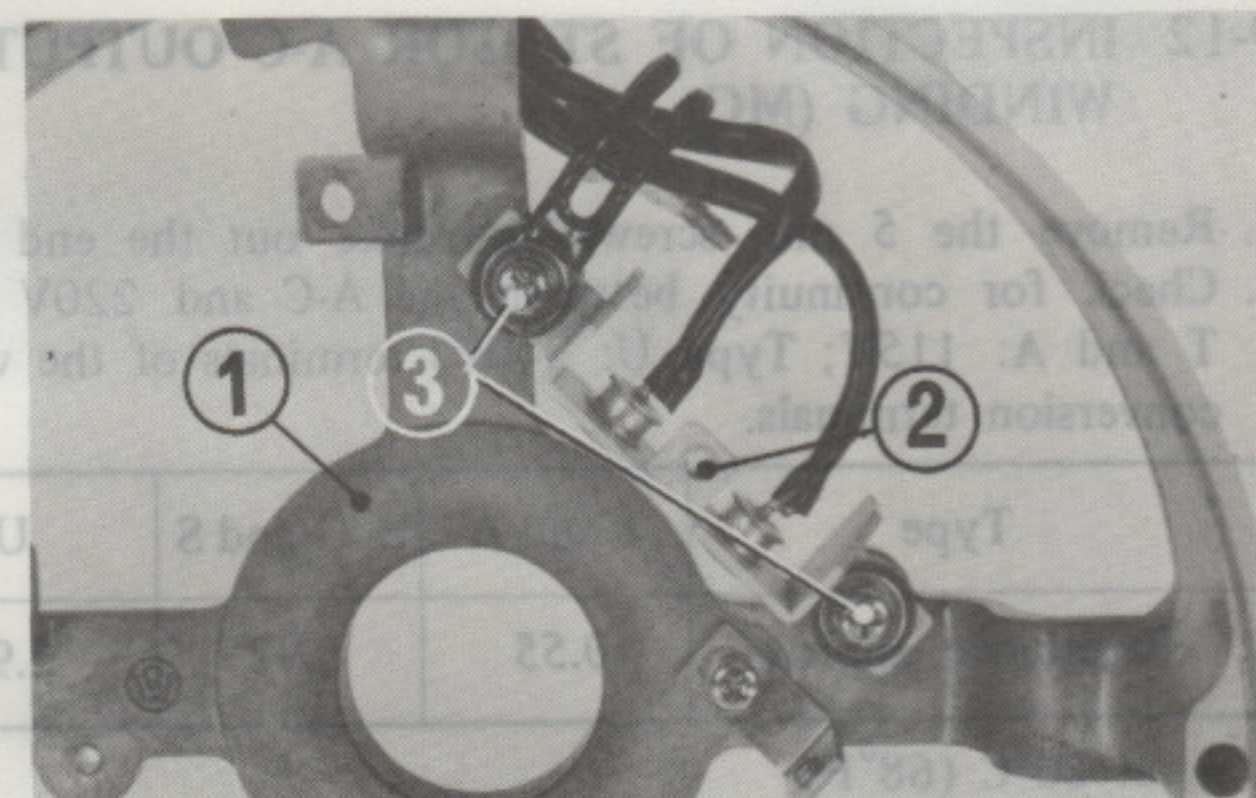


Fig. 9-25 (1) Rear housing (2) Diode rectifier (3) 5 mm screw

## 9-15 REPLACEMENT OF ROTOR AND STATOR

### Disassembly

1. Remove the control box and generator. (See page 15)
2. Loosen off the four 4 mm screws and remove the fan cover.
3. Remove the two 4 mm screws, disconnect each wire lead and take out the brush holder.

**NOTE:** Avoid damaging the brushes when removing and installing the brush holder.

4. Disconnect the wire leads running to the diode rectifier and ground.
5. Remove two voltage conversion terminal securing 5 mm screws.
6. Remove the two 4 mm screws and two 3 mm screws; take off the 8-p coupler cover.
7. Remove the four 6 mm bolts and take out the rear housing while lightly tapping it around with a soft hammer.

**NOTE:** Use care not to damage the rotor ball bearing while operation.

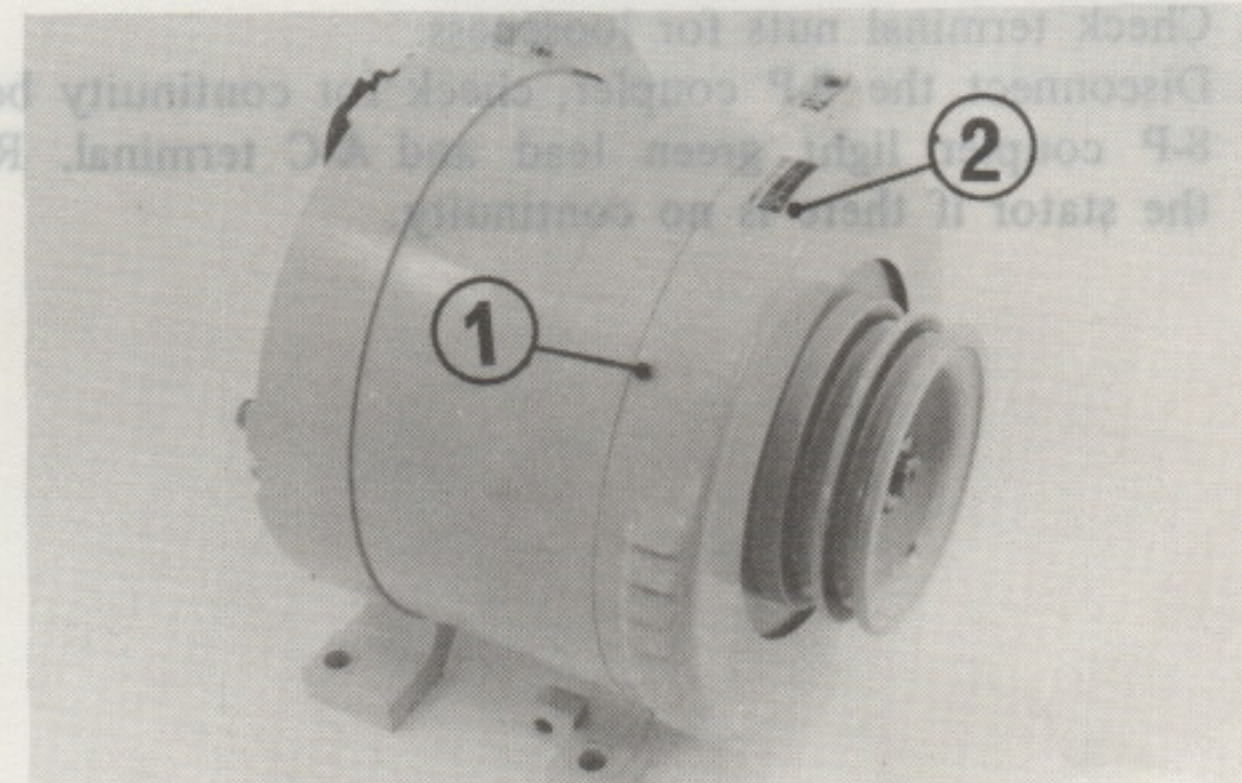


Fig. 9-26 (1) Fan cover (2) 4 mm screw

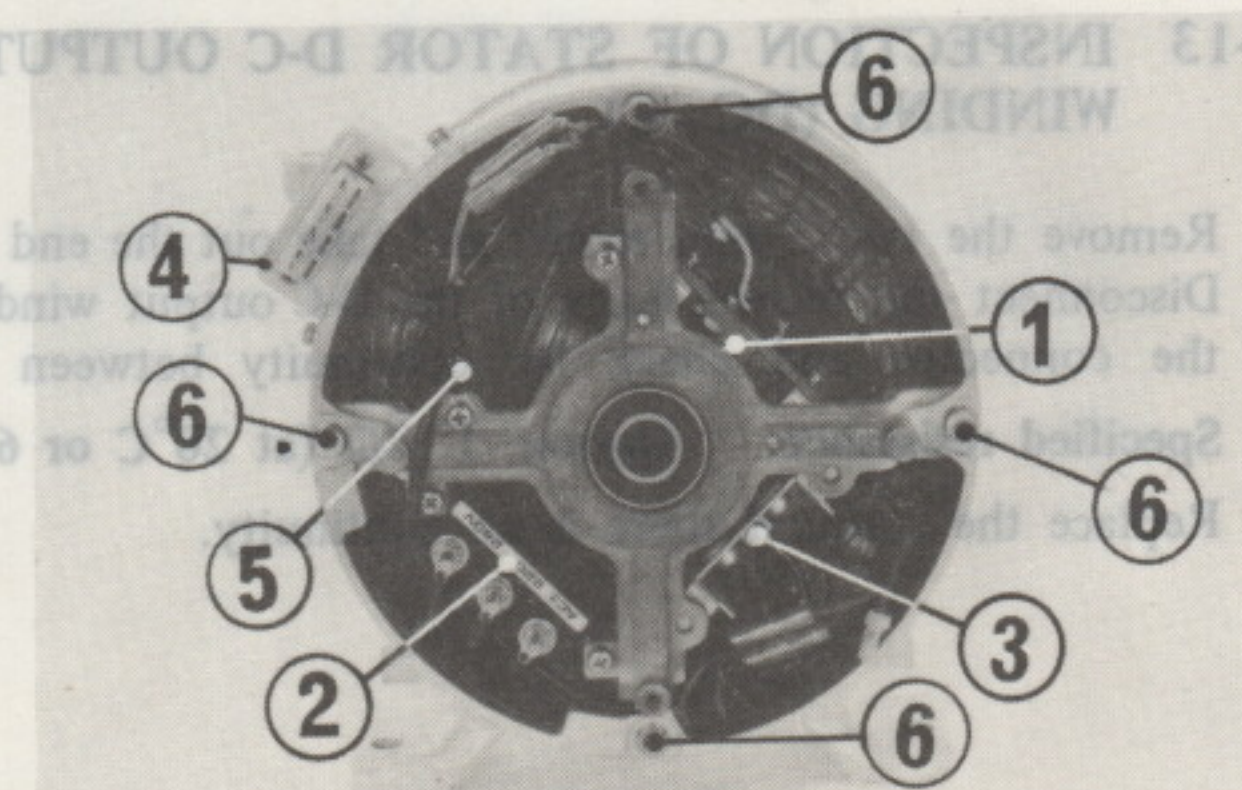


Fig. 9-27 (1) Brush holder (2) Voltage conversion terminal (3) Diode rectifier (4) 8-P coupler cover (5) Ground wire (6) 6 mm bolt



7. Remove the stator cover and stator.

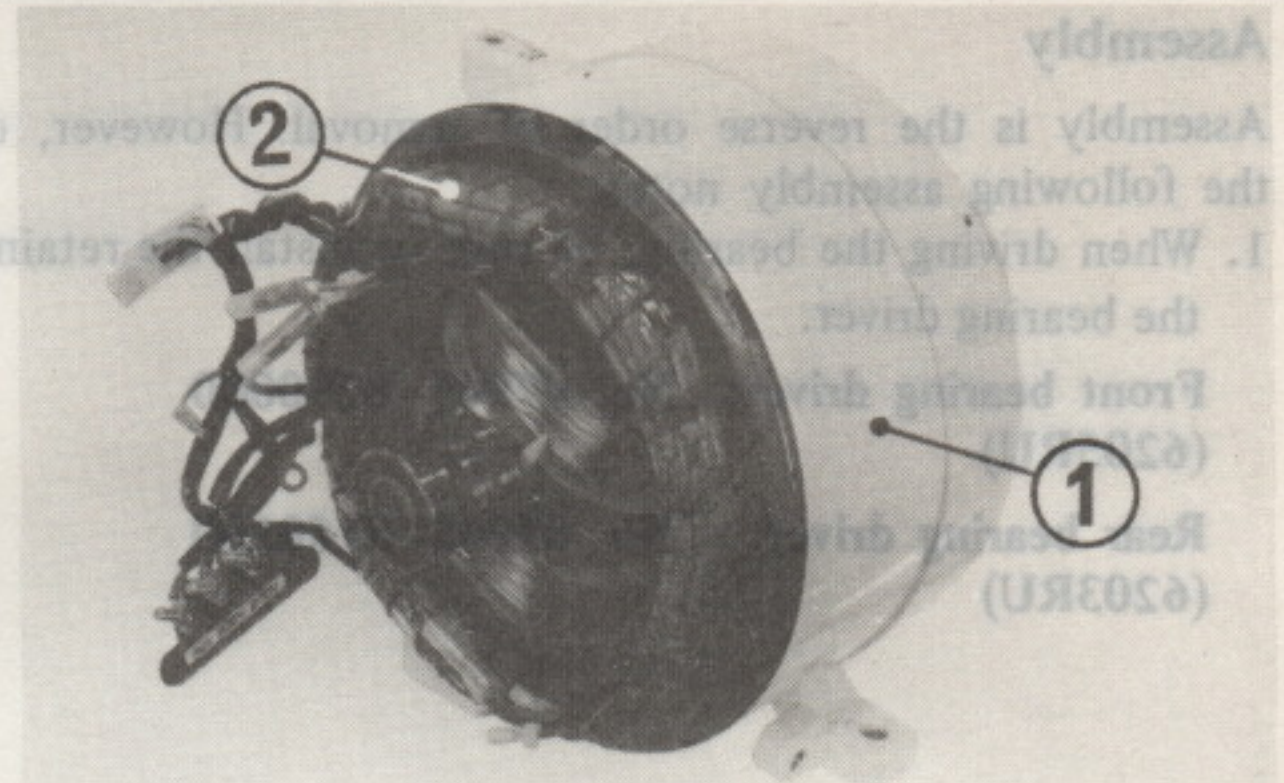
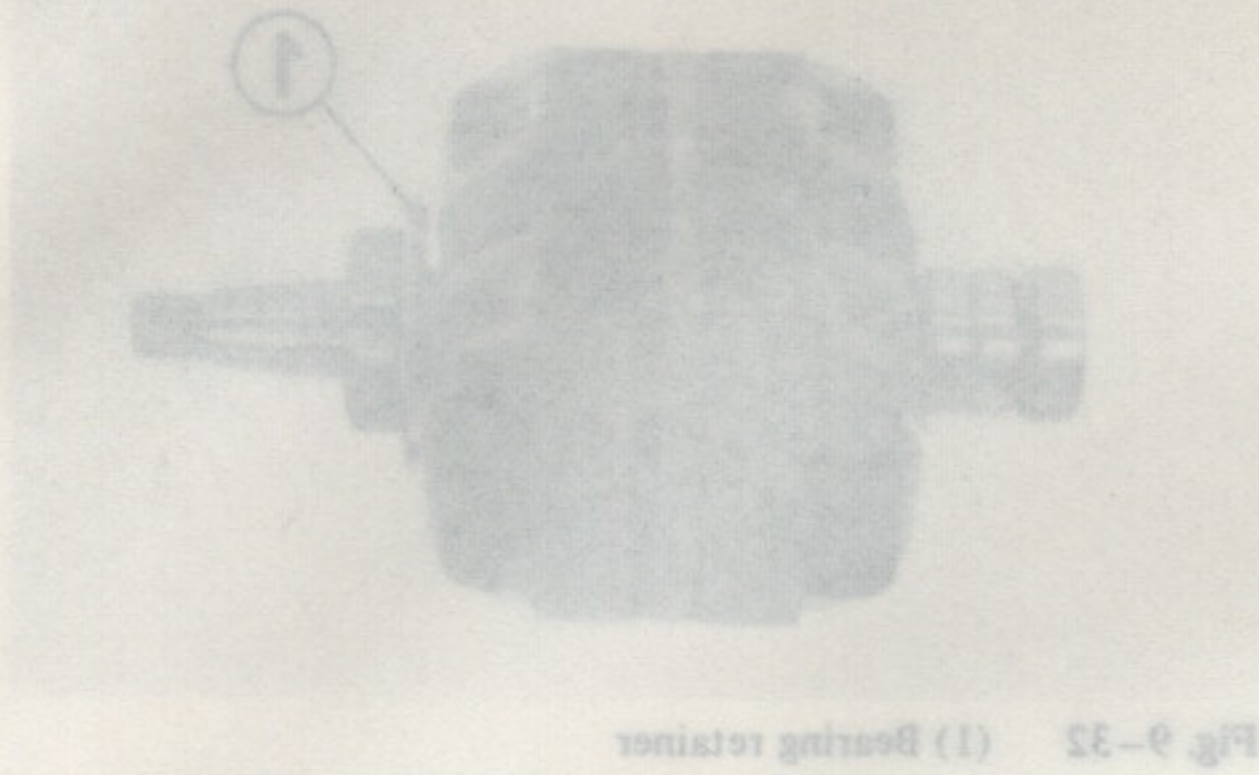


Fig. 9-28 (1) Stator cover (2) Stator

8. Hold the pulley with tool "Pulley Holder" (Tool No. 07925-8150000); loosen the 18 mm nut. Install the two 8 mm holder bolts and screw in until the pulley comes off the rotor.

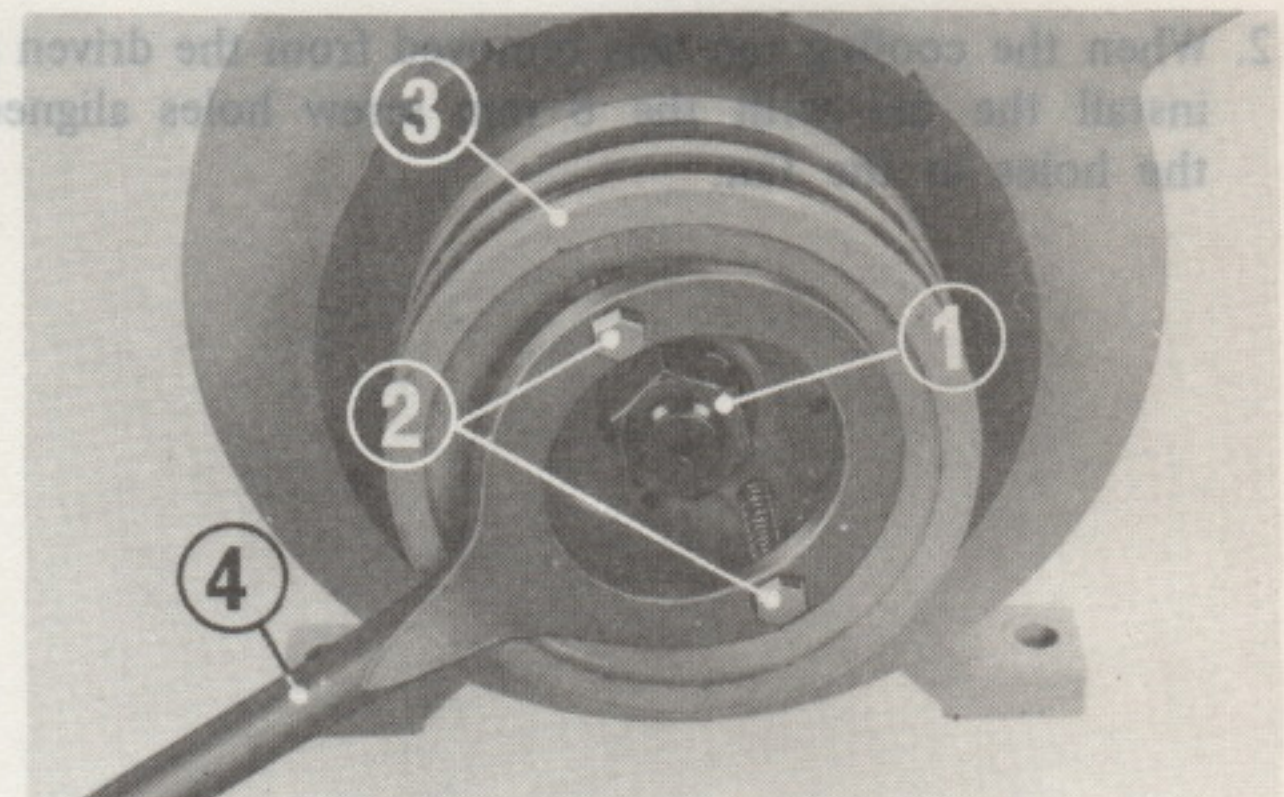
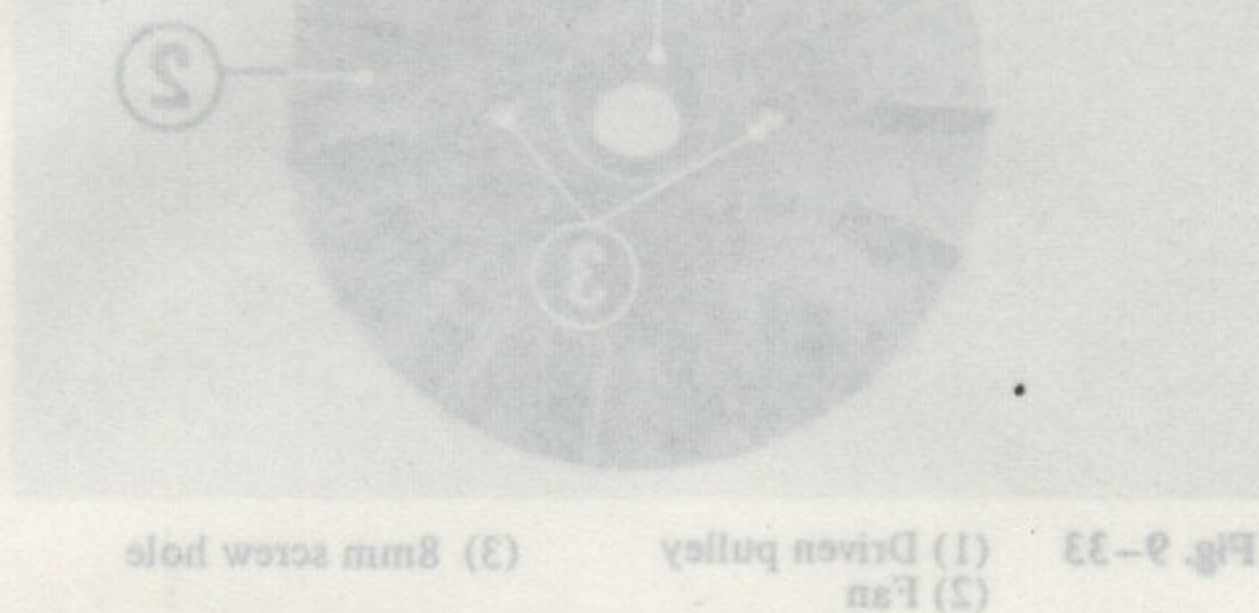


Fig. 9-29 (1) 18 mm nut (2) 8 mm bolt (3) Driven pulley (4) Pulley holder

9. Remove the four 4 mm screws and remove the bearing cover and front housing.

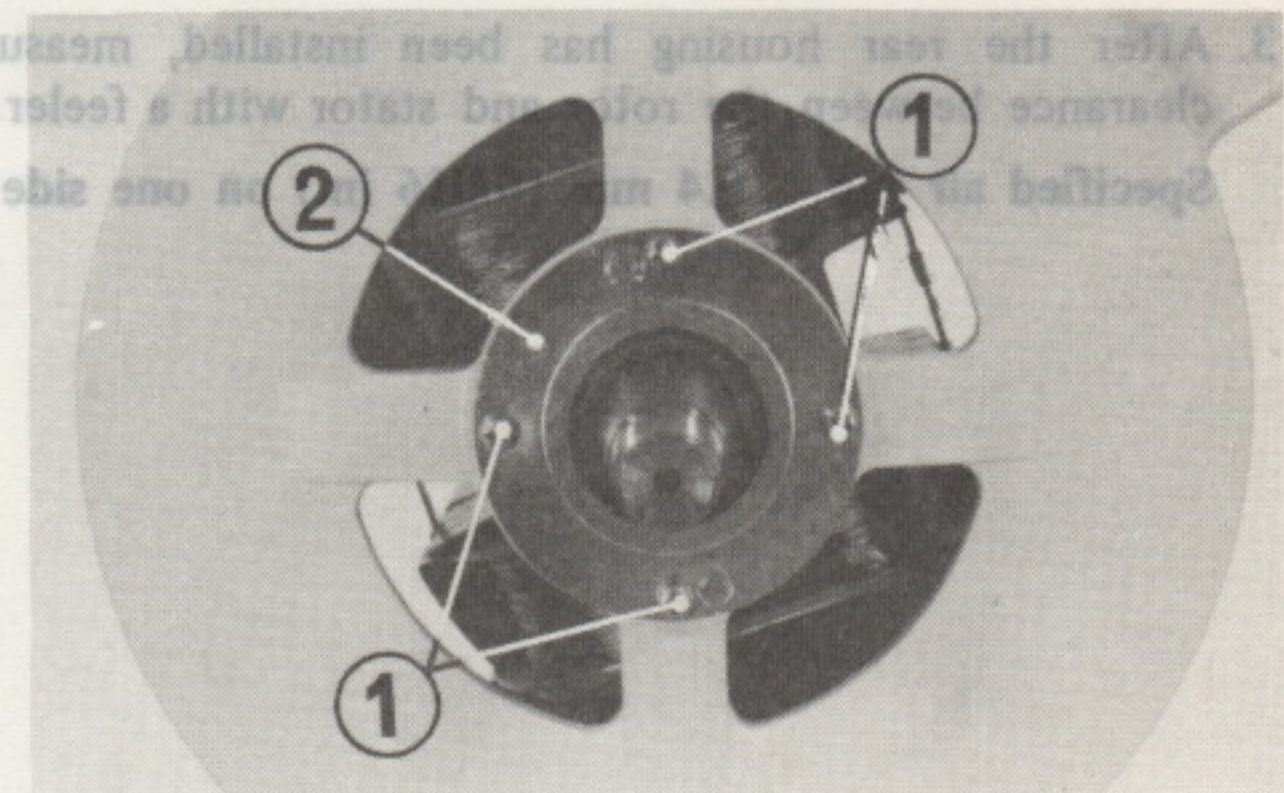
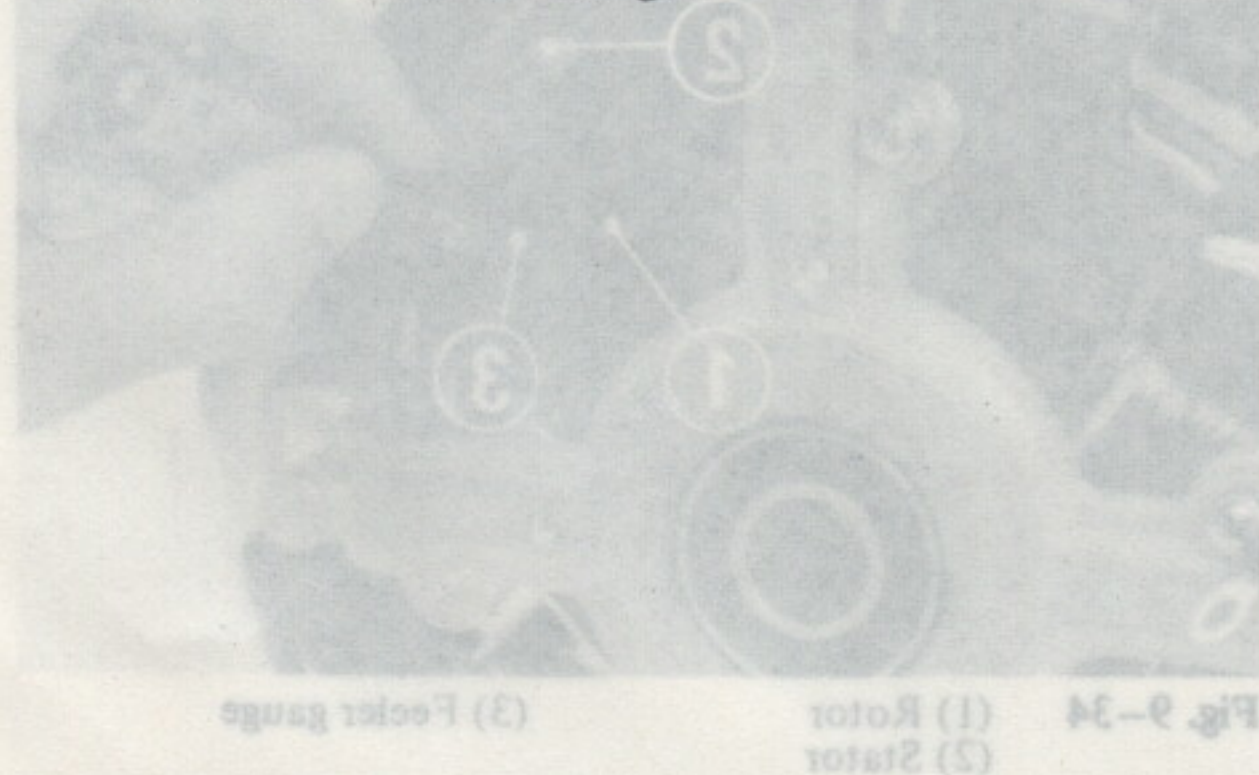


Fig. 9-30 (1) 4 mm screw (2) Bearing cover

10. Check the rotor front and rear bearings for excessive rattle and replace if necessary.

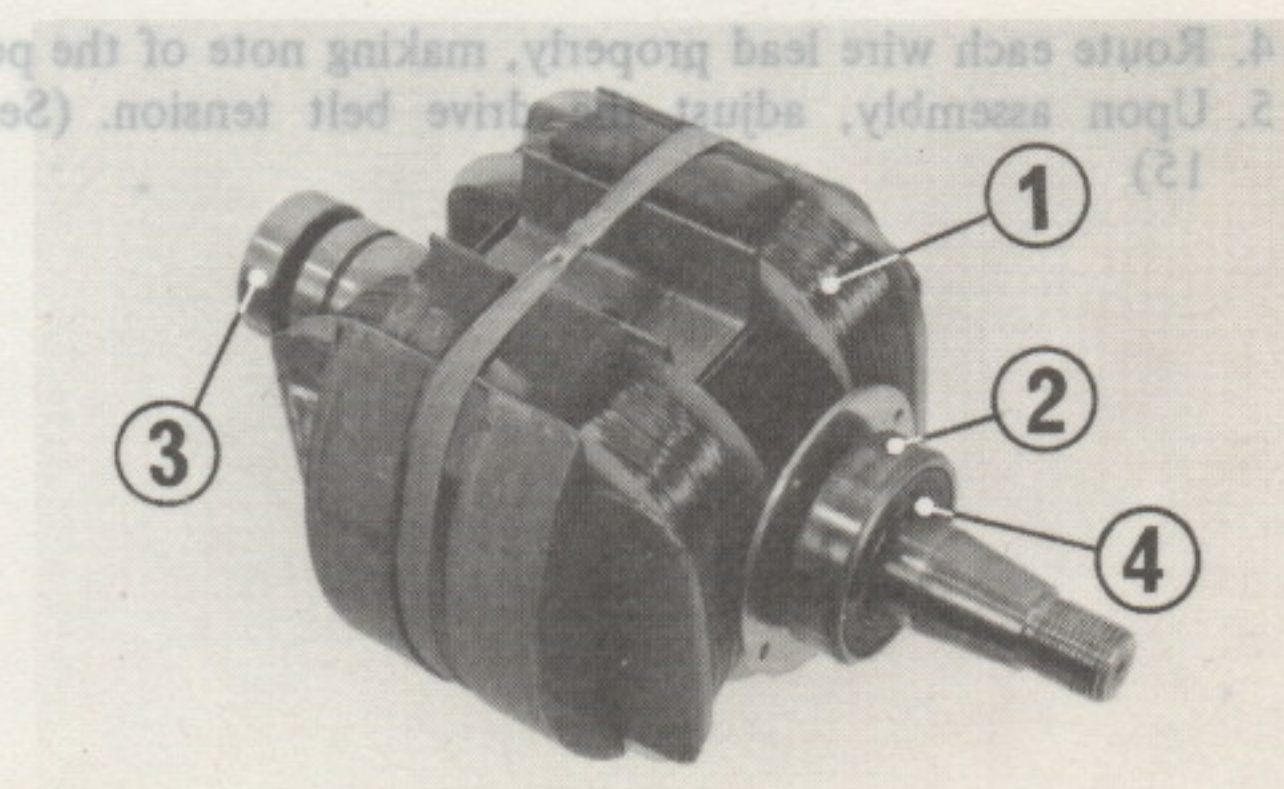
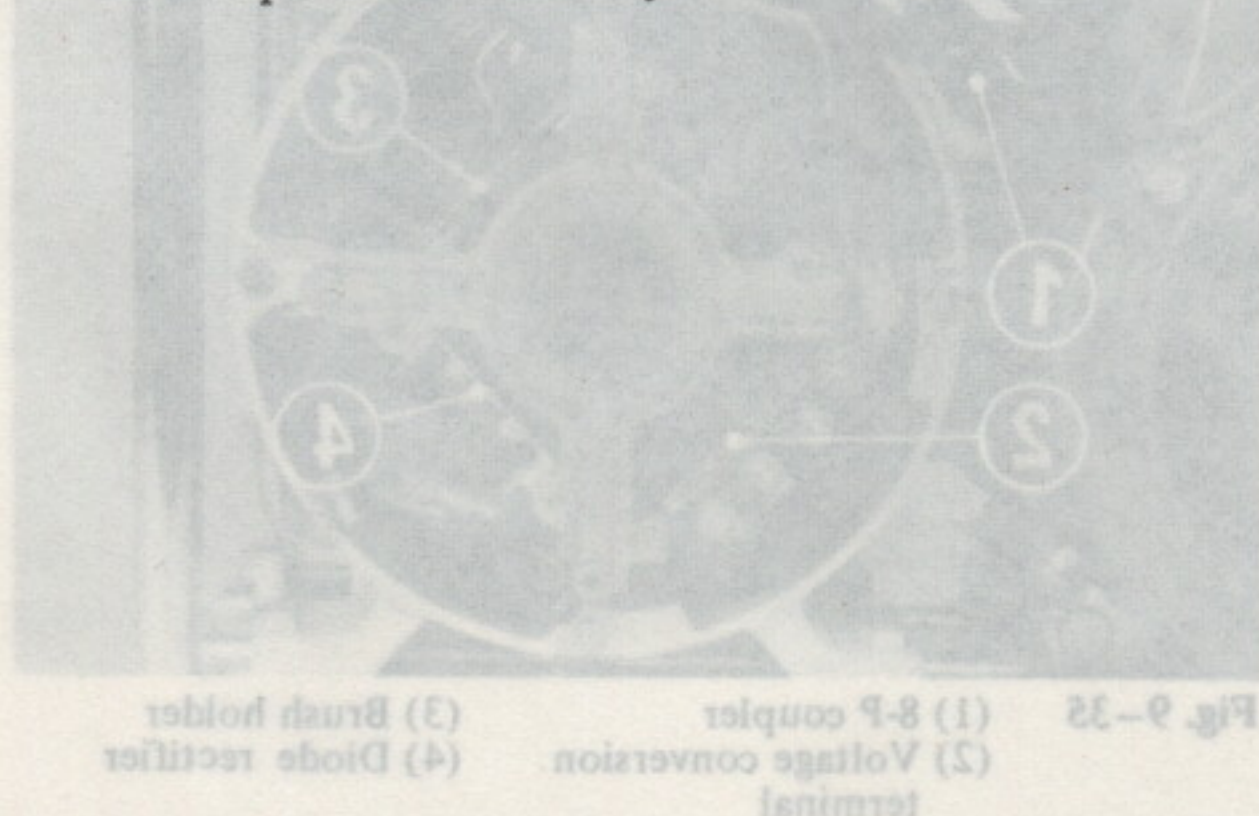


Fig. 9-31 (1) Rotor (2) Front bearing (6205RU) (3) Rear bearing (6203RU) (4) Snap ring



## Assembly

Assembly is the reverse order of removal. However, observe the following assembly notes:

1. When driving the bearing, be sure to install the retainer. Use the bearing driver.

Front bearing driver: No. 07945-8290000  
(6205RU)

Rear bearing driver: No. 07945-8150100  
(6203RU)

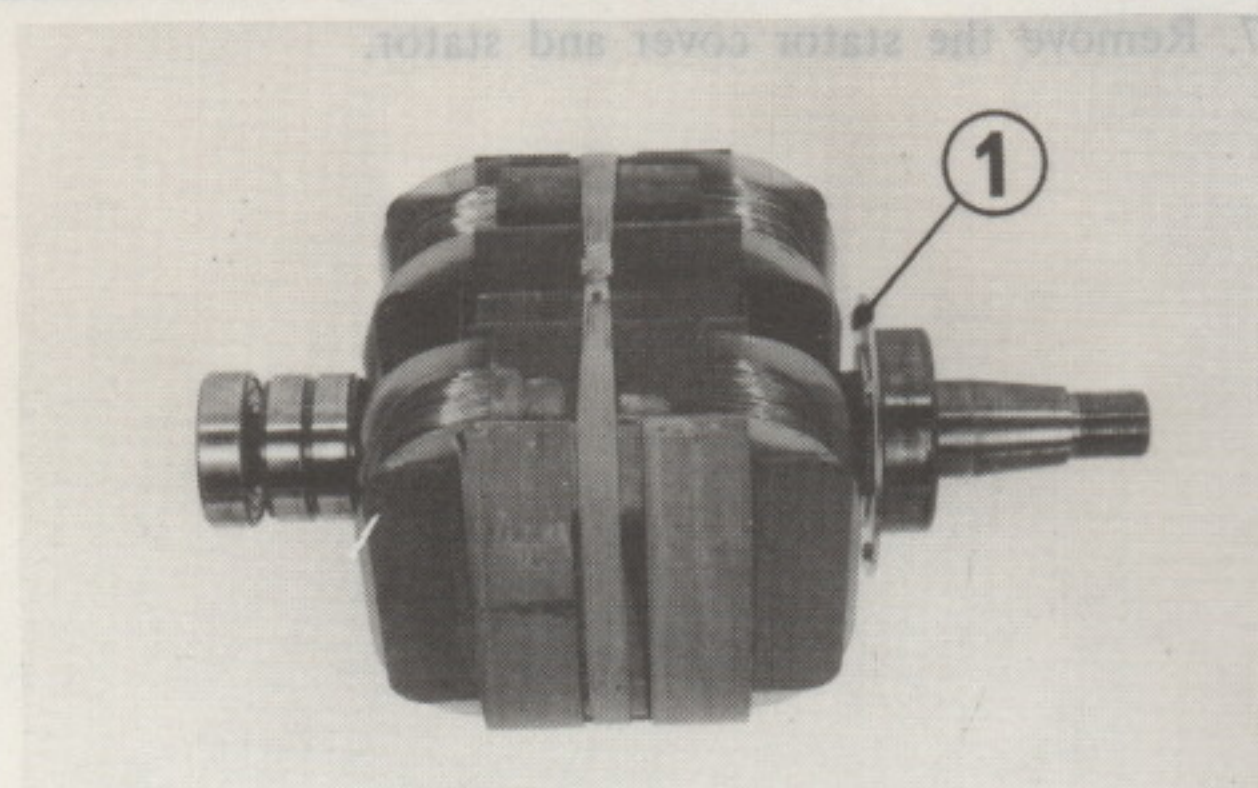


Fig. 9-32 (1) Bearing retainer

2. When the cooling fan was removed from the driven pulley, install the fan with the 8 mm screw holes aligned with the holes in the fan.

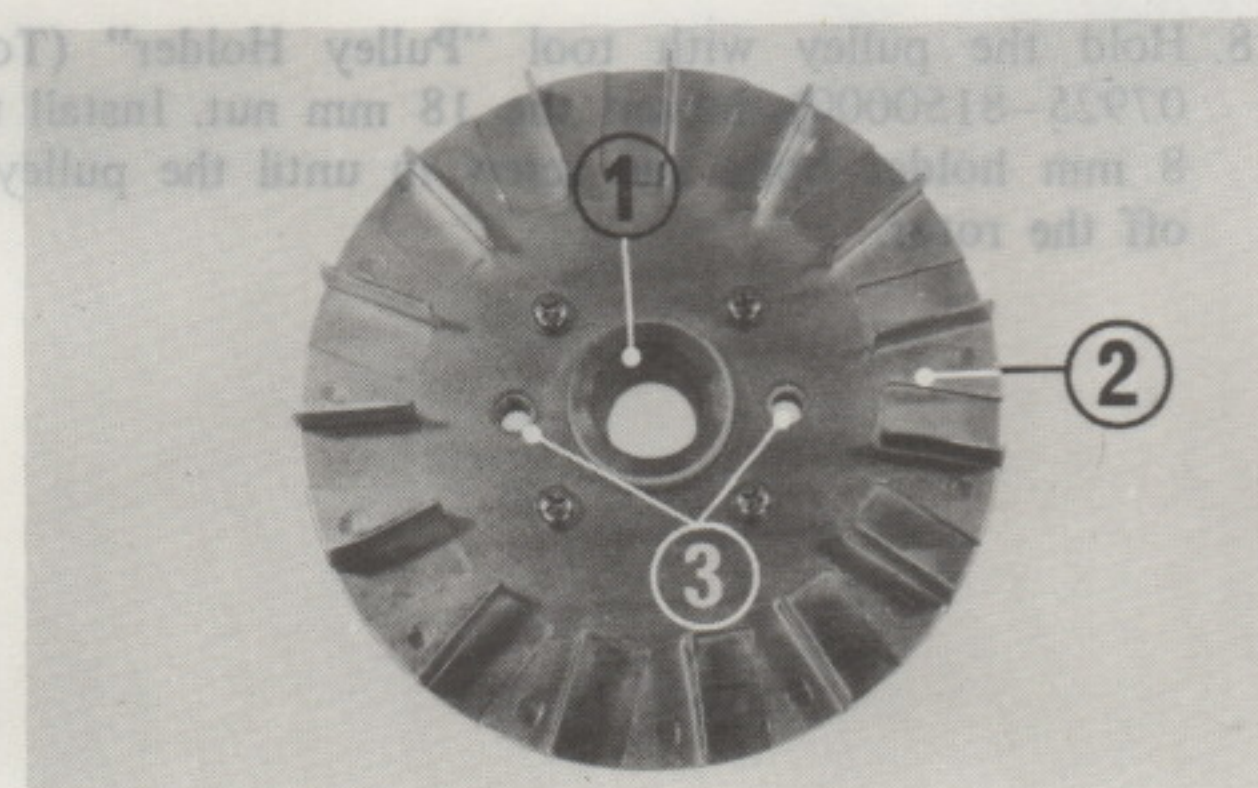


Fig. 9-33 (1) Driven pulley (2) Fan (3) 8mm screw hole

3. After the rear housing has been installed, measure the clearance between the rotor and stator with a feeler gauge.  
Specified air gap: 0.4 mm (0.016 in.) on one side

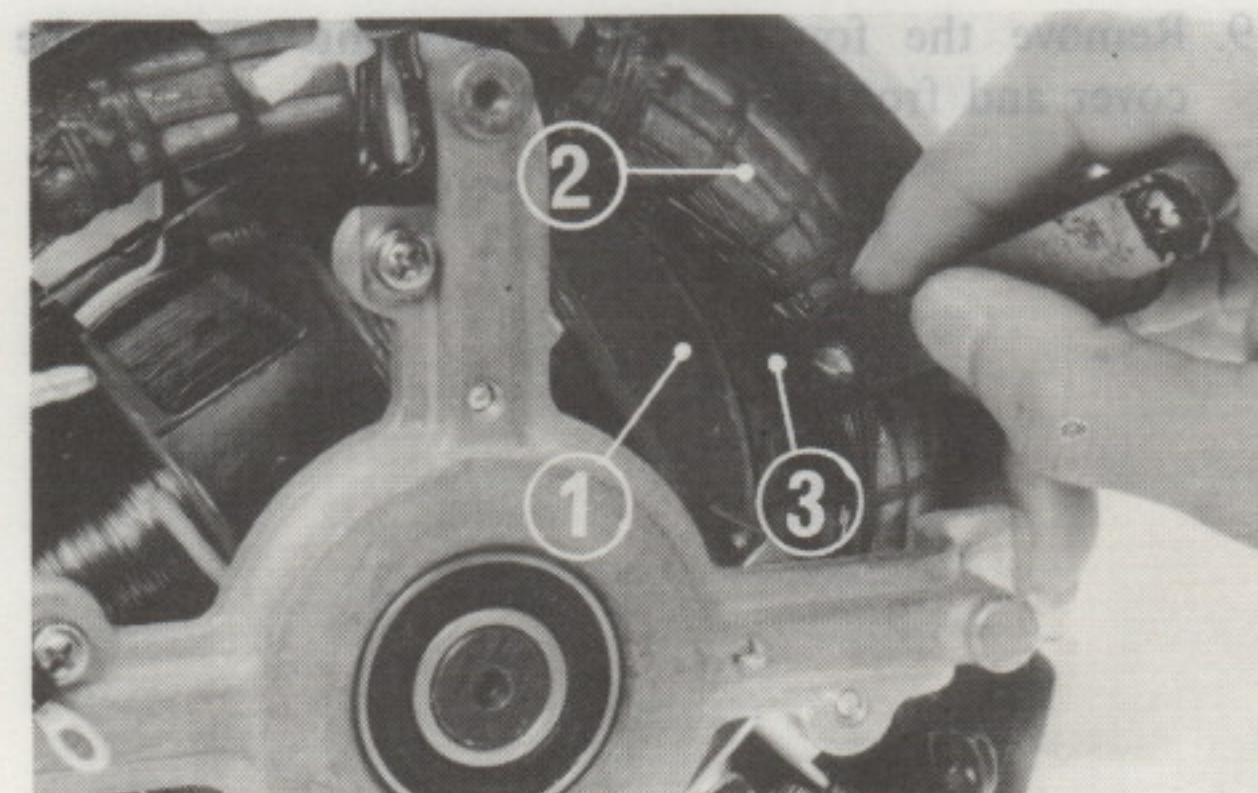


Fig. 9-34 (1) Rotor (2) Stator (3) Feeler gauge

4. Route each wire lead properly, making note of the polarity.
5. Upon assembly, adjust the drive belt tension. (See page 15)

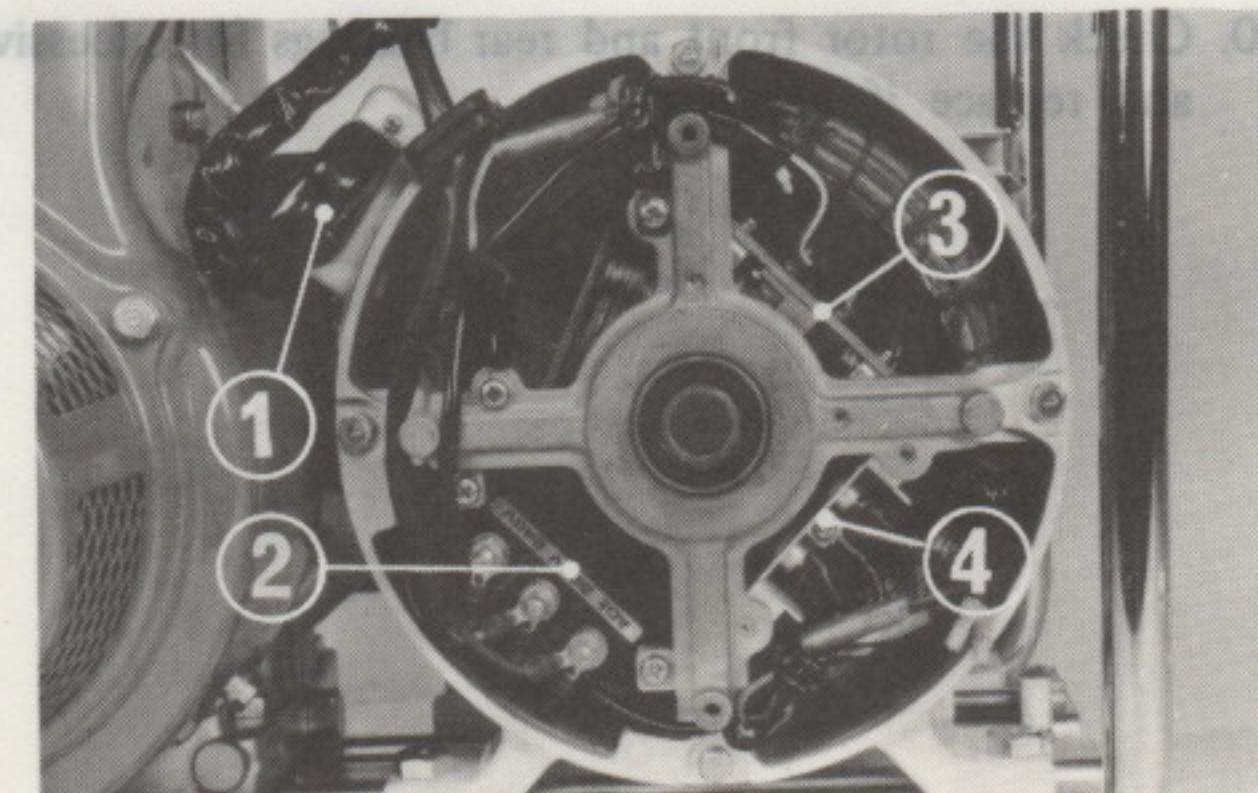


Fig. 9-35 (1) 8-P coupler (2) Voltage conversion terminal (3) Brush holder (4) Diode rectifier



## 10. ENGINE

The G65K1 engine continues to use the same basic design as the G65K2. Following procedures describe information peculiar to this modified version to avoid duplication. Refer to the G65 Shop Manual and Supplements for limits, tolerances and other important disassembly, inspection and reassembly information.

### THROTTLE ADJUSTMENT

1. Set the adjusting knob in the top center position.
2. Start the engine.

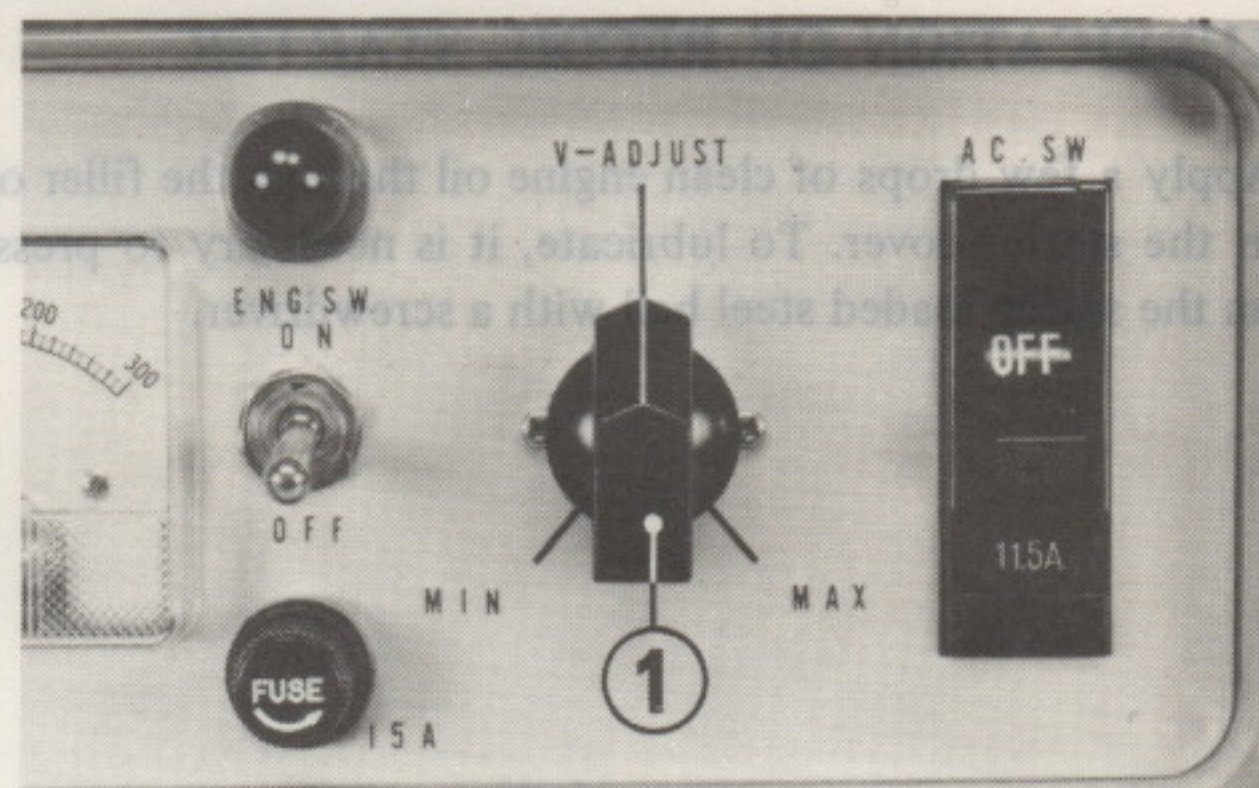


Fig. 10-1 (1) Adjusting knob

3. Turn the governor spring adjusting screw either in or out as necessary until the rated voltage is reached.
4. Connect a load of 2.0 kw to the generator. This can be made by connecting a 2.0 kw heater.

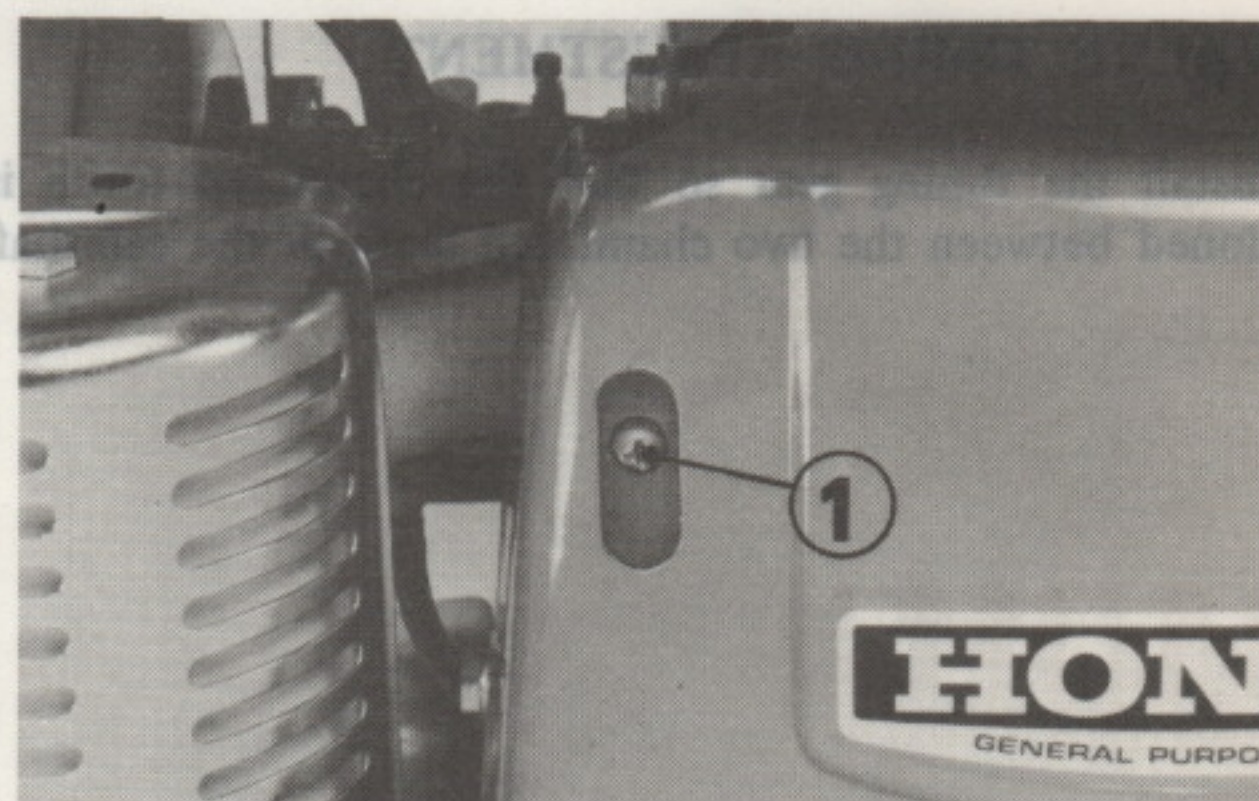


Fig. 10-2 (1) Governor spring adjusting screw

5. Again turn in or out the governor spring adjusting screw until the engine runs at 3,500 rpm.
6. Measure the rated voltage and engine speed while the engine is hot (after running for 30 - 40 minutes).

**Engine rated speed: 3,500 rpm**

**Rated voltage:**

Type	T and A	E, G and S	U
Rated voltage	115V	220V	240V

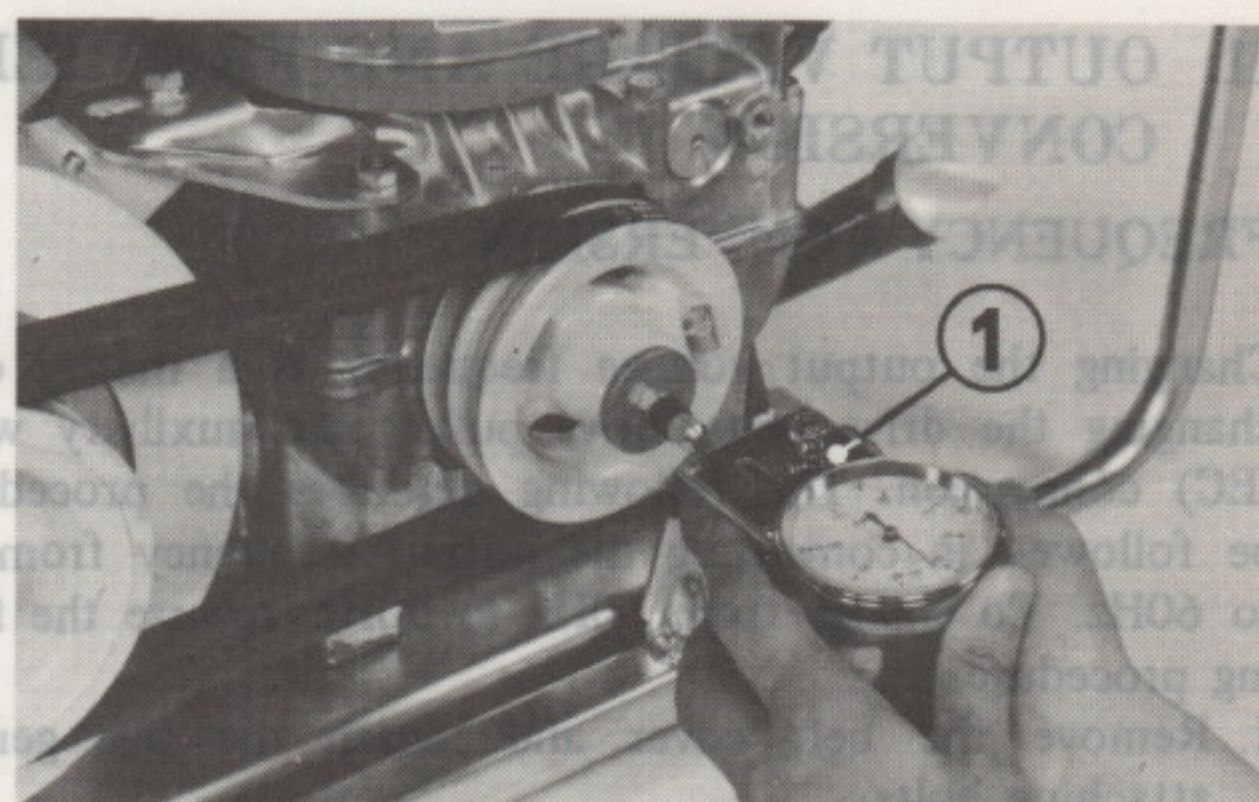


Fig. 10-3 (1) Tachometer

### CYLINDER COMPRESSION

Compression is normal if meter reading indicates above 4 kg/cm<sup>2</sup> (56.93 psi.) and the engine speed is 450 - 600 rpm when the recoil starter is pulled by an adult.

**NOTE:** As compared to the previous E2500K2, the recoil starter is revised to require less effort to crank the engine.

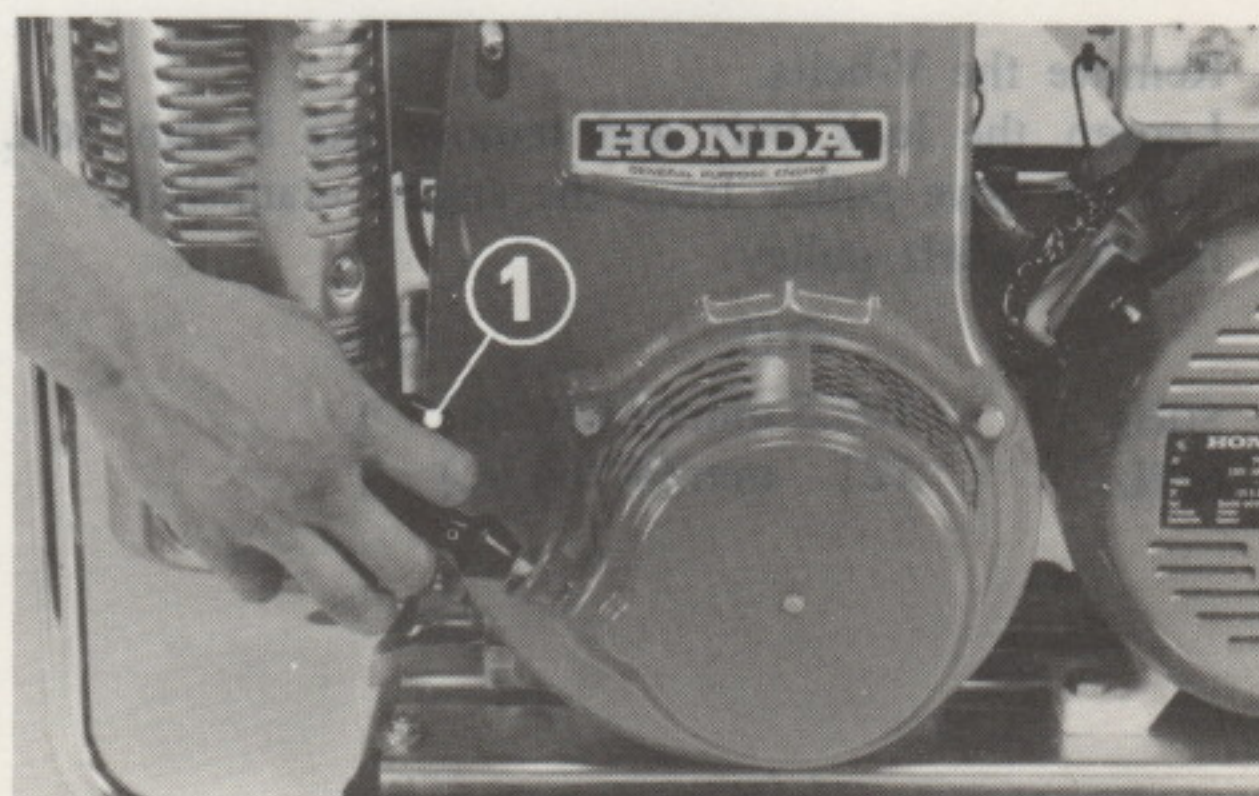


Fig. 10-4 (1) Recoil starter



## LUBRICATION OF RECOIL STARTER

Apply a few drops of clean engine oil through the filler opening in the starter cover. To lubricate, it is necessary to press down on the spring loaded steel ball with a screwdriver.

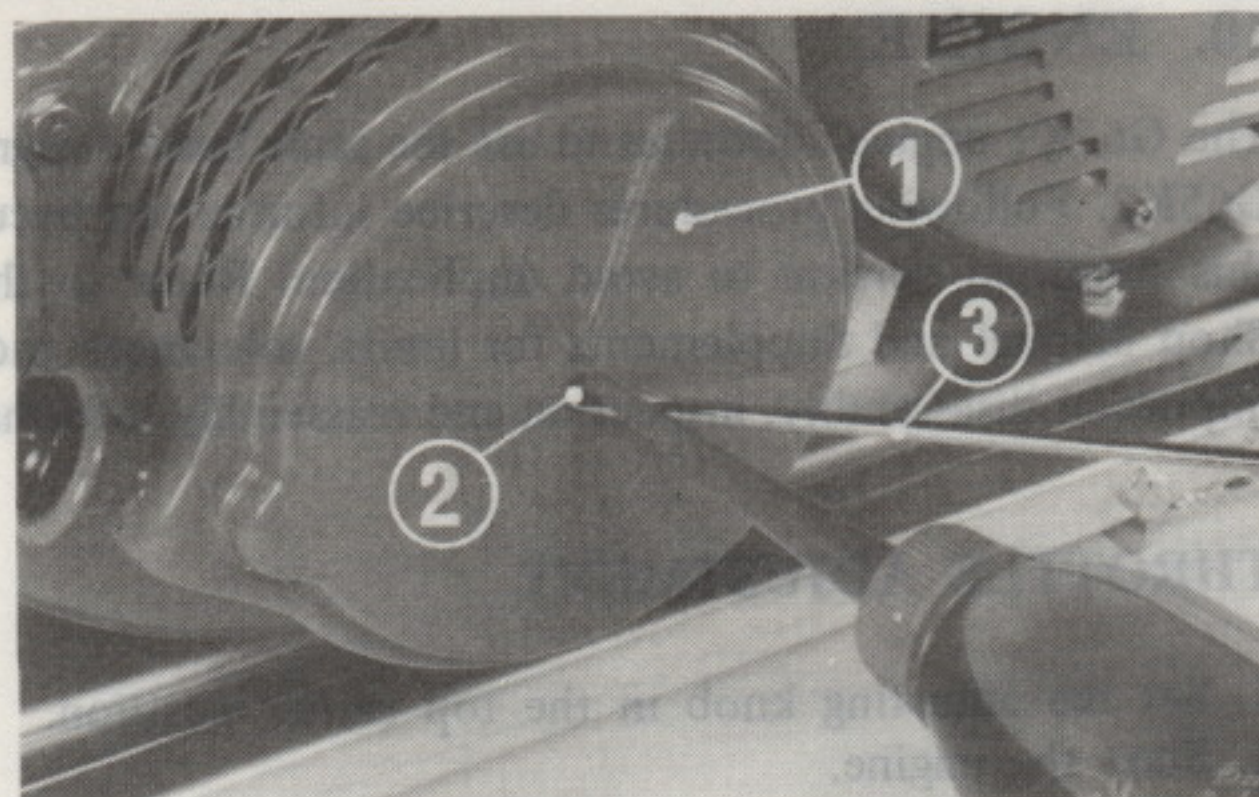


Fig. 10-5 (1) Starter cover (2) Filler opening (3) Screwdriver

## VALVE TIMING ADJUSTMENT

Install the timing gear so that the chamfered tooth is positioned between the two chamfered teeth of the camshaft gear.

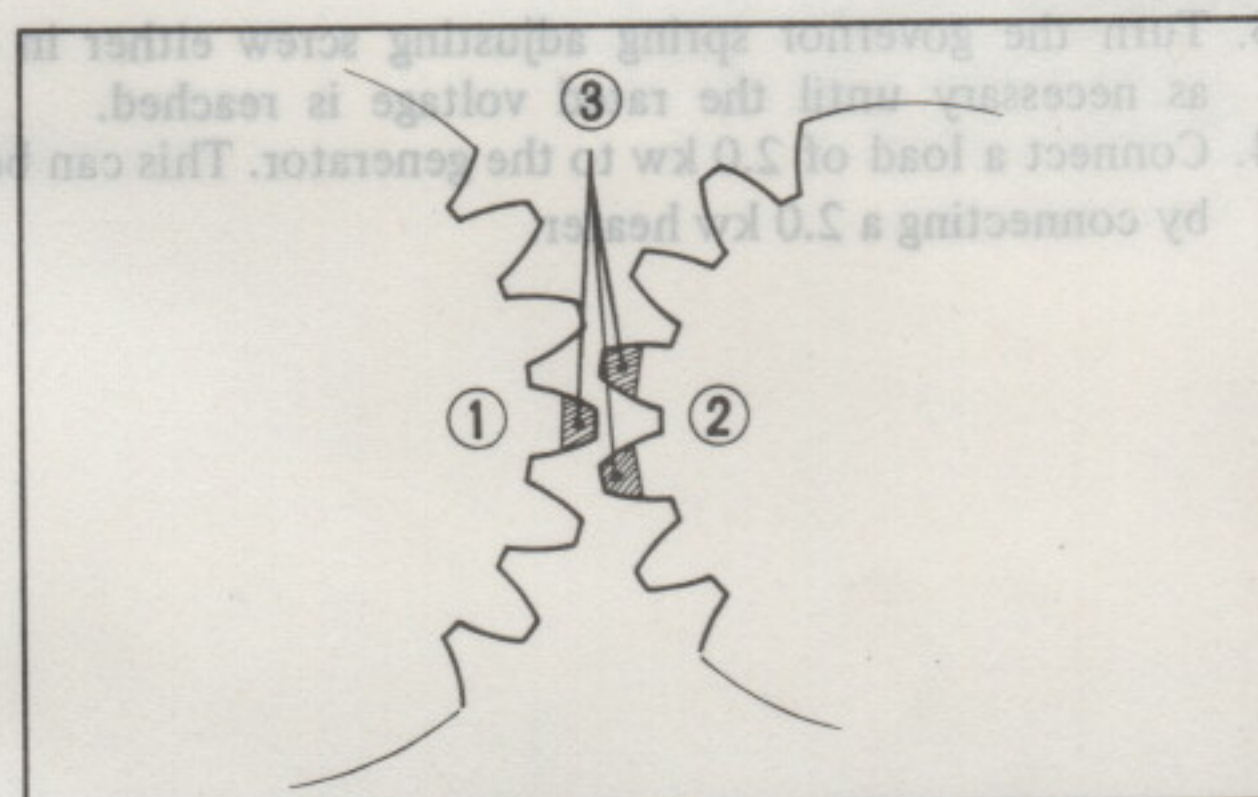


Fig. 10-6 (1) Timing gear (2) Camshaft gear (3) Chamfered tooth

## 11. OUTPUT VOLTAGE AND FREQUENCY CONVERSION

### FREQUENCY CONVERSION

Changing the output voltage frequency is a matter of just changing the drive belts, drive pulley and auxiliary winding (EC) connection. The following describes the procedure to be followed in converting the output frequency from 50Hz to 60Hz. To change from 60Hz to 50Hz, reverse the following procedure.

1. Remove the belt cover and loosen the five generator attaching bolts.
2. Loosen the belt adjusting bolt.
3. Remove the V-belts.
4. Loosen the lock bolt and remove the 8 mm bolt. Take out the drive pulley from the engine crankshaft.
5. Install a 60Hz pulley:

	O.D.	Q'ty
50Hz :	102.5 mm (4.036 in.)	1
60Hz :	121 mm (4.764 in.)	1

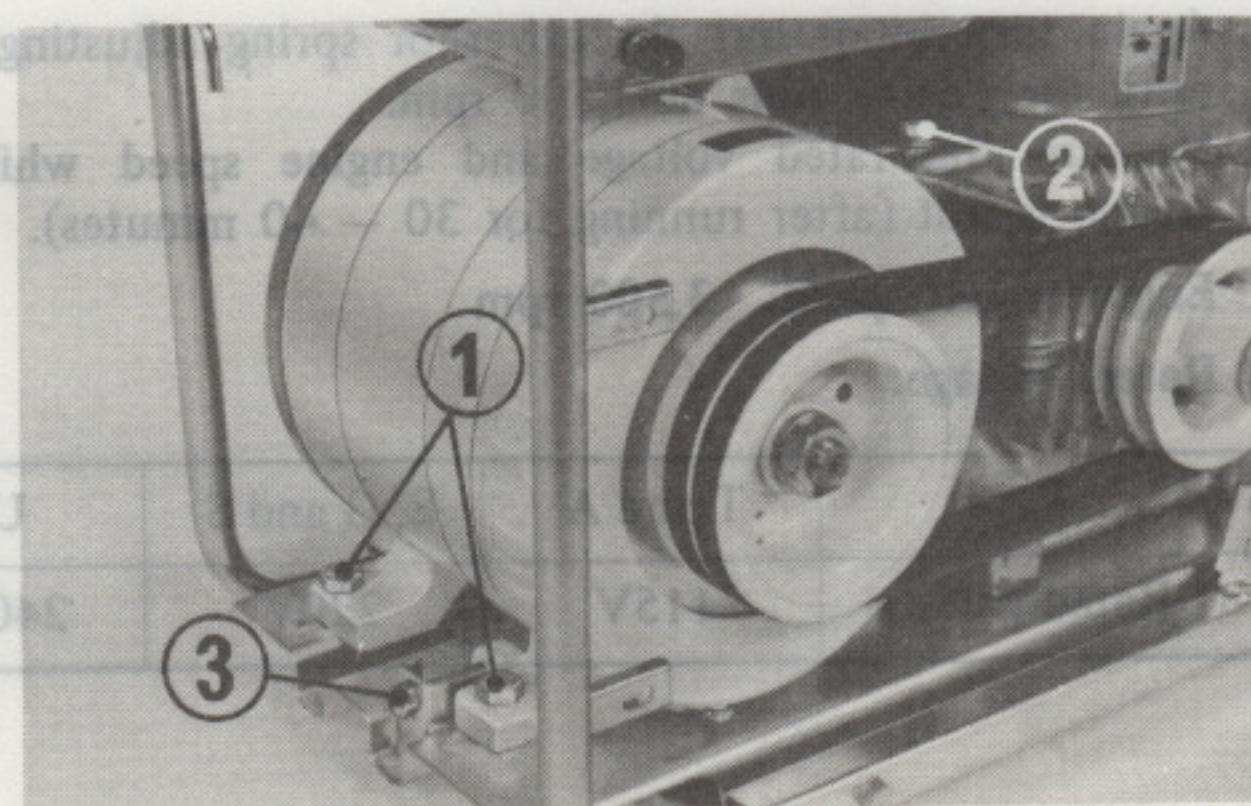


Fig. 11-1 (1) 10 mm bolt (2) 8 mm bolt (3) Belt adjusting bolt

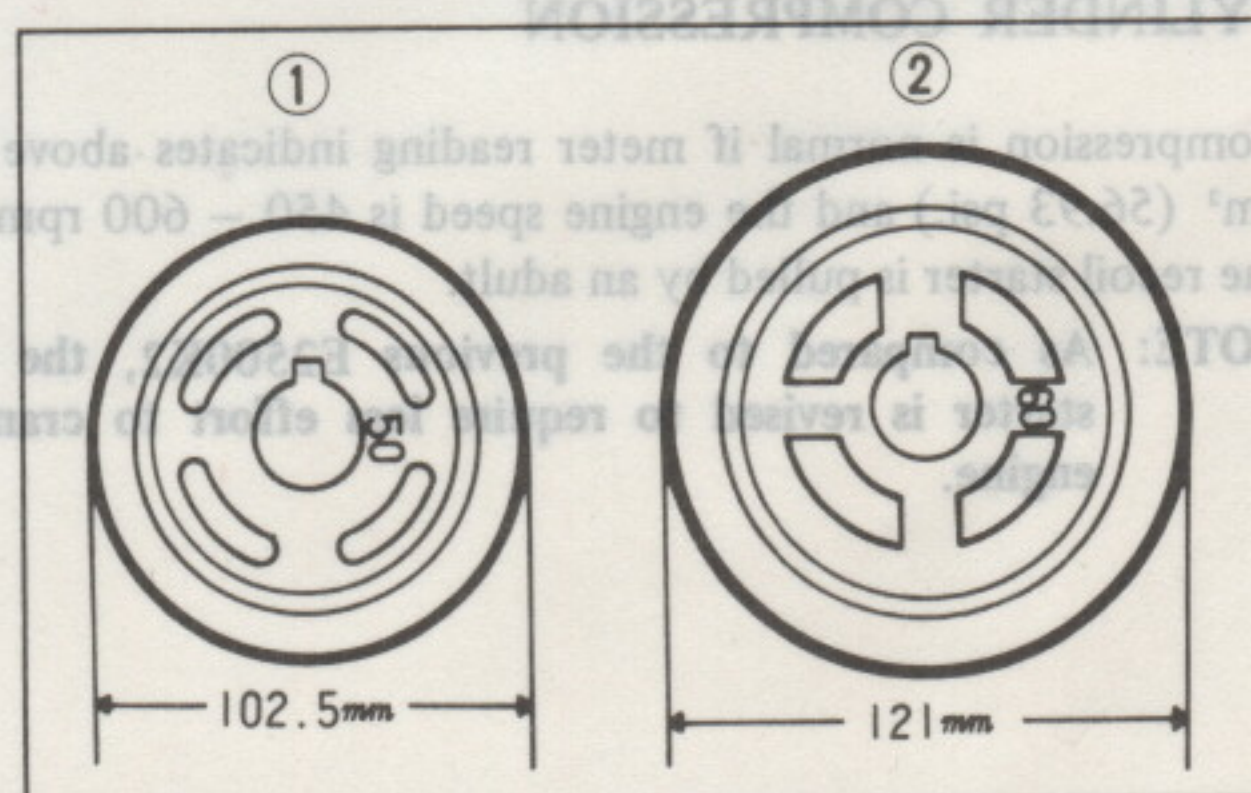


Fig. 11-2 (1) 50Hz pulley (2) 60Hz pulley



6. Install 60Hz belts and adjust tension. (See page 15)

	Marking	Q'ty
50Hz :	A-30	2
60Hz :	A-31	2

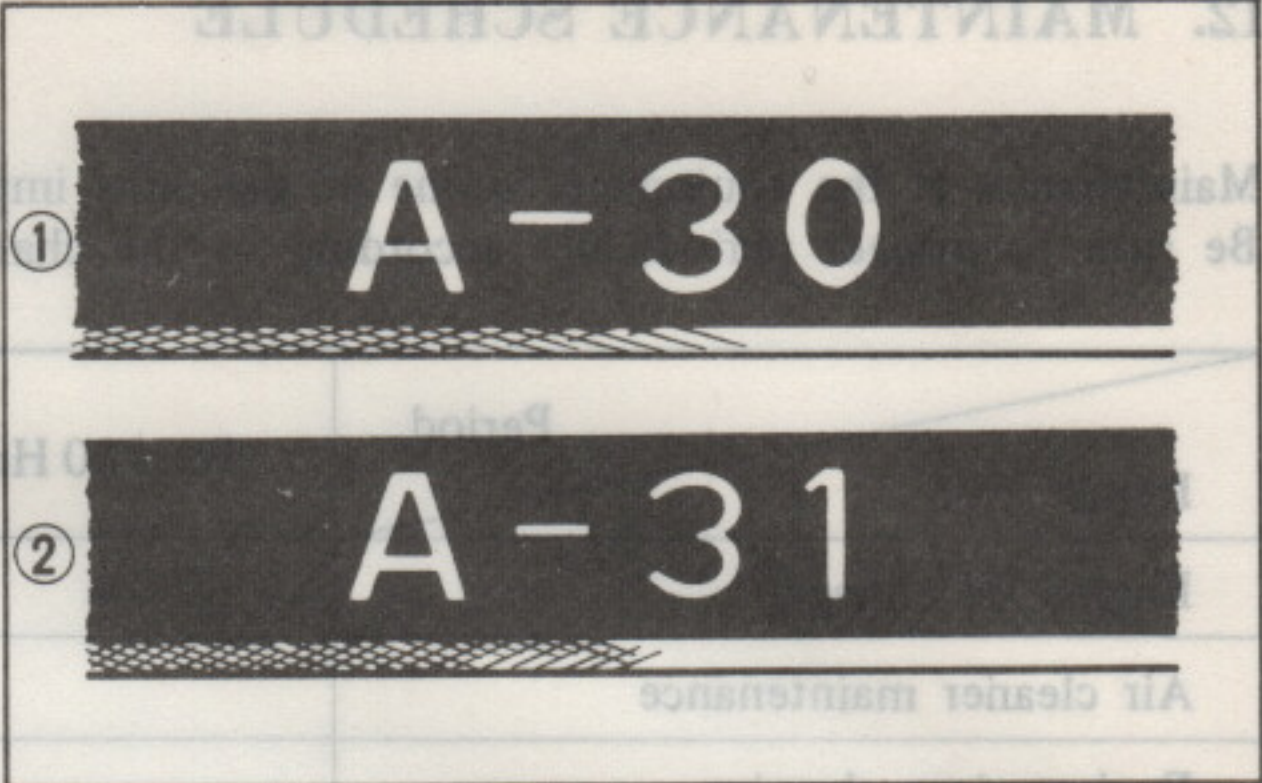


Fig. 11-3 (1) 50Hz V-belt (2) 60Hz V-belt

7. Remove the end cover and disconnect the light green lead from the light green lead, marked "5", of the auxiliary winding. Reconnect the lead to the light green lead marked "6".

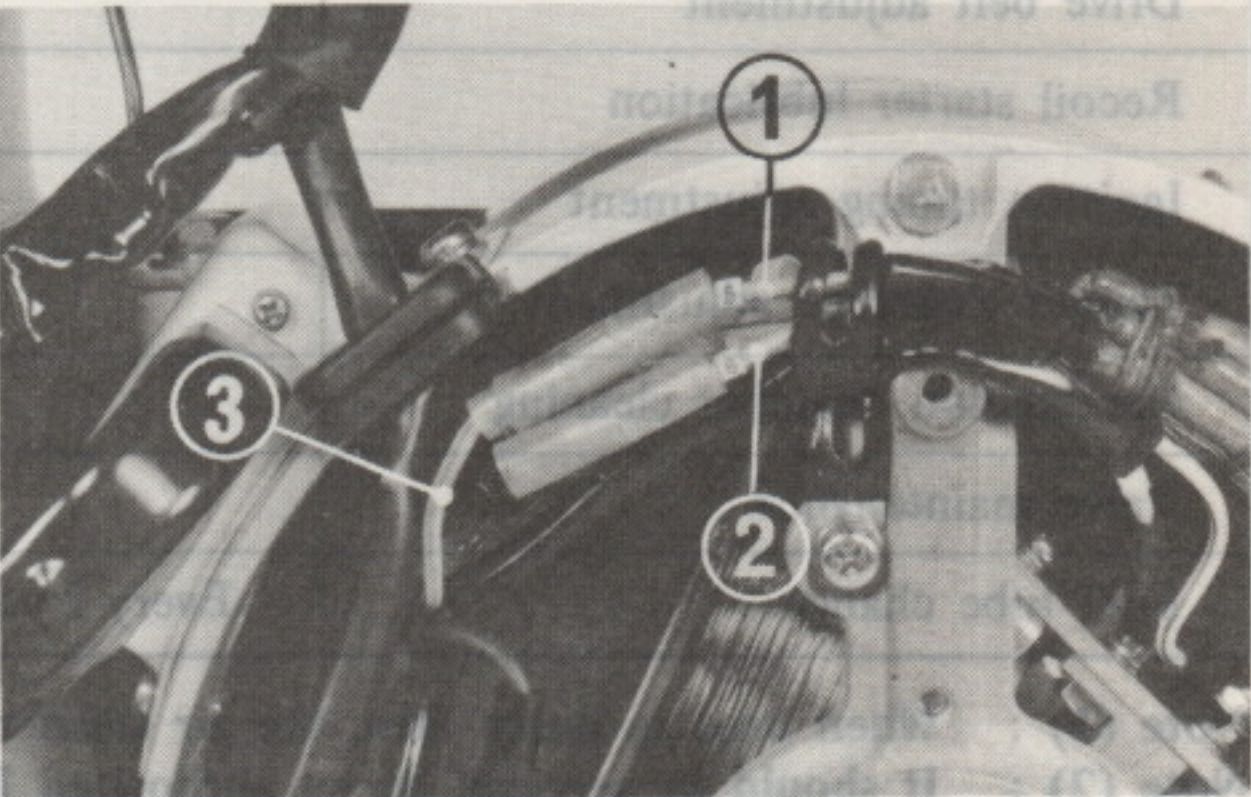


Fig. 11-4 (1) Light green lead marked "5" (50Hz)  
(2) Light green lead marked "6" (60Hz)  
(3) Light green lead

VOLTAGE CONVERSION

Output voltage can be changed from 115V to 100V on models T and A, 220V to 240V on models E, G and S, and 240V to 220V on model U, respectively. To change, reconnect the red lead on the control box side to the desired terminal.

Output Voltage	Input Voltage	Model
115V	100V	T, A
220V	240V	E, G, S
240V	220V	U

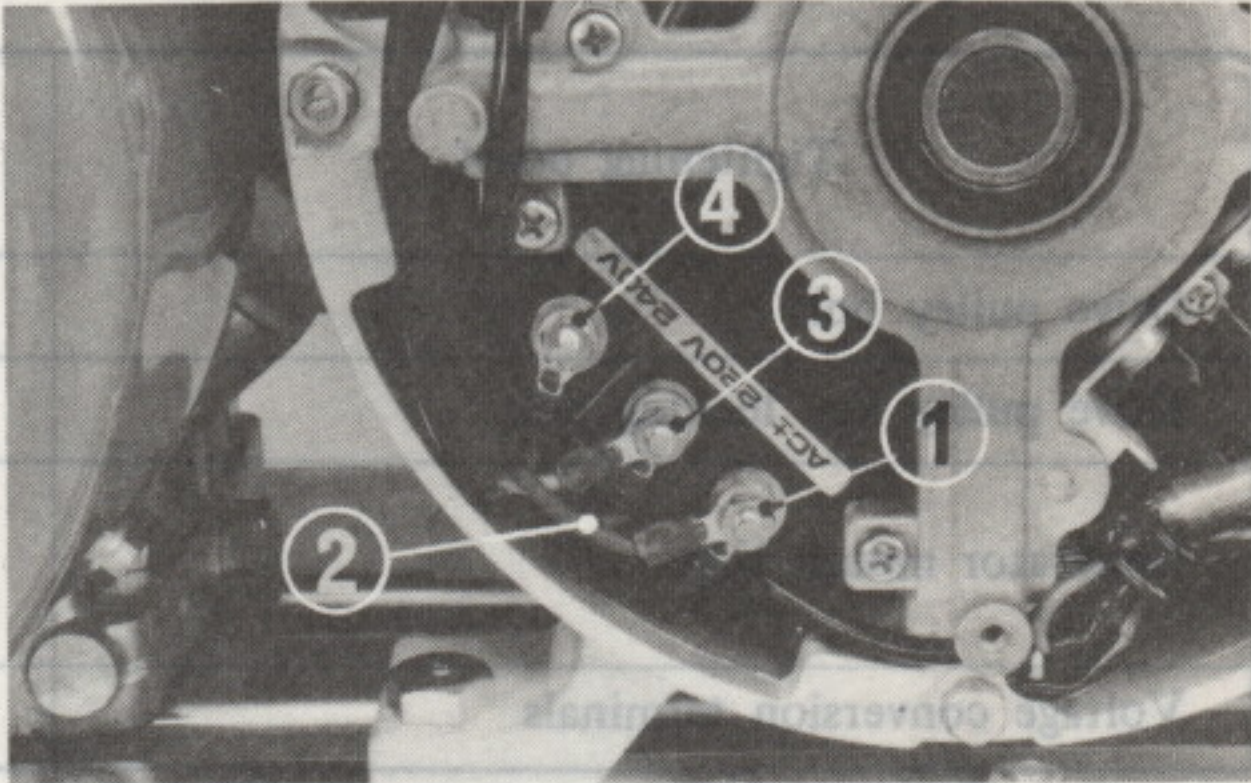


Fig. 11-5 (1) Voltage conversion terminal  
(2) Red lead  
(3) 220V terminal (4) 240V terminal

Torque			Torque		
lb-ft	kg-cm		lb-ft	kg-cm	
21.7 - 29.0	300 - 400	10 mm bolt, nut	2.2 - 3.6	32 - 50	2 mm screw
36.2 - 43.4	500 - 600	12 mm bolt, nut	2.1 - 8.0	70 - 110	6 mm screw
7.3 - 10.1	100 - 140	6 mm flange bolt	3.3 - 4.3	45 - 60	2 mm bolt, nut
17.4 - 21.7	240 - 300	8 mm flange bolt	2.6 - 8.7	80 - 120	6 mm bolt, nut
21.7 - 29.0	300 - 400	10 mm flange bolt	13.0 - 18.1	180 - 250	8 mm bolt, nut



## 12. MAINTENANCE SCHEDULE

Maintenance of the equipment is one of the most important factors in maintaining the equipment in the best condition. Be sure to inspect periodically according to the chart below.

Items	Period	First 20 Hrs.	Every 50 Hrs.	Every 100 Hrs.	Every 300 Hrs., or one year
Engine oil change		•		•	
Air cleaner maintenance			• (1)		
Fuel strainer cleaning			•		
Spark plug maintenance				•	
Drive belt adjustment				•	
Recoil starter lubrication				•	
Ignition timing adjustment					• (2)
Tappet clearance adjustment					• (2)
Combustion chamber cleaning					• (2)
Valve maintenance					• (2)
Fuel tube change	Every 2 years				

Note (1) : When used in dusty area, the air cleaner should be serviced more frequently.

Note (2) : It should be serviced by an authorized Honda dealer, unless the owner has proper tools and is mechanically proficient.

## 13. TORQUE SPECIFICATIONS

Tightening point	Thread dia. (mm)	Torque	
		kg-cm	lbs-ft
Drive pulley bolt	8	200 - 280	14.5 - 20.1
Drive pulley key locking bolt	7	100 - 150	7.3 - 10.9
Generator mount bolt	10	400 - 500	29.0 - 36.2
	8	200 - 280	14.5 - 20.1
Voltage conversion terminals	-	30 - 60	2.2 - 4.3

## STANDARD TIGHTENING TORQUE

	Torque			Torque	
	kg-cm	lbs-ft		kg-cm	lbs-ft
5 mm screw	35 - 50	2.5 - 3.6	10 mm bolt, nut	300 - 400	21.7 - 29.0
6 mm screw	70 - 110	5.1 - 8.0	12 mm bolt, nut	500 - 600	36.2 - 43.4
5 mm bolt, nut	45 - 60	3.3 - 4.3	6 mm flange bolt	100 - 140	7.3 - 10.1
6 mm bolt, nut	80 - 120	5.6 - 8.7	8 mm flange bolt	240 - 300	17.4 - 21.7
8 mm bolt, nut	180 - 250	13.0 - 18.1	10 mm flange bolt	300 - 400	21.7 - 29.0



## 14. WIRING DIAGRAM

